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The Pharmaceutical Council assembled on the 4th inst., Mr. John Williams presiding. The president reported that an interview had been obtained with the secretary to the Board of Inland Revenue respecting the employment of methylated spirits for liniments. It will be remembered that the Board had recently prohibited its use except for soap and camphor liniments. The deputation had discussed the matter with the secretary, and at his request had drawn up a memorial on the subject, which had been sent to the Board. The answer of the Board had not yet been received.—It was agreed that two members of the Edinburgh Board of Examiners and the assistant-secretary should visit London during the present month in order to be present at the examinations, the necessary expenses to be paid by the society. Mr. Bottle said Dr. Fowler, an examiner of the Apothecaries' Company, had expressed to him a desire to visit the examinations, with a view of bringing the apothecaries' dispensing examination to a level with that of the Pharmaceutical Society. It was resolved to invite Dr. Fowler or a deputation from the Apothecaries' Company.—According to the report presented by the Law and Parliamentary Committee, consideration had been given to the resolution passed

last July at the Birmingham Conference urging the council to test the legality of the dispensing of poisons on the part of co-operative stores. The committee would like to explain their views [or, as we may interpret this, their reasons for doing nothing] to a deputation from the Chemists' and Druggists' Trade Association. The council fully approved of this method of treating the question. The committee had also been called upon to consider a letter from a member at Nottingham, who reported that a private detective had lately been employed by the Nottingham Medical Defence Association to visit various chemists' shops, and under the pretence of having a cold or sore throat had obtained a bottle of mixture, and that it was understood that proceedings were in some cases to be commenced for a breach of the Apothecaries' Act. The committee passed on the consideration of this important matter to the council. At this point it was stated that Mr. Jones, the president of the Trade Association, had come up to London with the object of consulting the council on this Nottingham danger. Much discussion ensued as to the propriety of admitting Mr. Jones, but this favour was ultimately accorded. That gentleman stated that he had come with the object of obtaining advice from the council as to the steps for his association to take in view of the threatened proceedings at Nottingham. The association had learned that summonses had been taken out, though they had not yet been served. The president informed Mr. Jones that the subject was then under consideration, and the decision of the council would appear when the report should be published. A long discussion then ensued on the question whether the council should announce its intention to defend a chemist and druggist for simple prescribing in the event of a vexatious prosecution on the part of the Medical Defence Association. Mr. Hampson proposed to pledge the council to do so. Mr. Robbious thought they could only deal with each case as it arose. They could not defend men who really trespassed on the province of medical men. Mr. Mackay saw difficulties in framing a resolution, but he desired that members of the trade should be aware that the society was both willing and able to protect them when unfairly interfered with. Mr. Rimmington, to whom we may presume the subject was quite new, informed the council that there was a clause in the Apothecaries' Act securing to chemists their previous rights. The President informed Mr. Rimmington that, according to a recent interpretation of the Act, that clause did not permit chemists to prescribe. Mr. Schacht desired to discuss the abstract question whether the society ought to defend anything at all. Mr. Atkins thought the same. Mr. Sandford said that though the society had never actually defended an accused person there were instances in which they had given support when a prosecution had taken place. Mr. Hampson and Mr. Betty advocated the passing of a formal resolution. Mr. Atkins, having referred to the Charter and found that the society was established for the purpose, among other things, of protecting those who carried on the business of chemists and druggists, seemed satisfied on the abstract question, and therefore he thought the society ought to give an individual unfairly attacked both pecuniary and moral support. Mr. Schacht thought they might go to Dr. Richardson, the President of the Medical Defence Association, who, he was sure, would take a reasonable view of the matter. He did not wish the society to defend him if he should be proceeded against. Mr. Frazer spoke in the same heroic tone. Mr. Mackay remarked that others might not be so fortunately circumstanced. Mr. Sandford proposed an amendment to the effect that it was undesirable to record an abstract opinion on this point, but that the council desired the Law Committee to watch any case which might come forward. This was rejected by 9 votes to 8, and by the same numbers Mr. Hampson's motion, which had been several times modified, was carried. It ran thus:—"That this council

is prepared to consider the case of any chemist and druggist who is threatened with vexatious proceedings for alleged infringement of the Apothecaries' Act; and, if the circumstances warrant, to defend the same." There was no other business of an important character.

The opening of the session at Bloomsbury Square occurred on October 4, when the prizes were distributed and the reports of the professors received with the usual vociferous cheering. We published a list of the prize-takers in our August number. The ceremony would be quite as effective, and a little less tedious to strangers, if the recipients of the prizes were presented with all their earnings in a single lump. When some of the young gentlemen have to march up and be saluted three, four, five, or six times each, the process gets painfully elongated, and the president sometimes finds himself comically short of new varieties of congratulatory expression. This business over, Mr. Barnard S. Proctor, of Newcastle-on-Tyne, delivered a highly original and forcible address to students, on the art of studying. This sentence is specially worthy of lasting remembrance, and we are glad it has been said so forcibly:—"When you have passed your examination remember you have not done any great thing; do not grow conceited on the strength of so small an achievement. All that passing indicates is that you are not too ignorant or too stupid to be entrusted with the practice of your trade."

The session has commenced very successfully at the other pharmaceutical schools. We report the opening of the South London School, last month, when Mr. Ince made a short speech; Mr. Wills, of the Westminster College, informs us that in addition to pupils present in the flesh, he has a larger number than ever before entered to study under "the Postal System." The secretary of the South-Western College of Chemistry tells us that the Liebig Scholarship at this institution, announced in our last month's issue, has been awarded to Mr. Wallace Crook, Hungerford, Berkshire.

The Glasgow Chemists' and Druggists' Association is to be opened on November 8, when Mr. D. Frazer will deliver an inaugural address.

A meeting of the Executive Committee of the Chemists' and Druggists' Trade Association is announced for the 20th inst. The most important business will probably concern the defence of the chemists at Nottingham threatened with prosecution under the Apothecaries' Act. These cases have been investigated by the secretary on the spot. We hear that a communication has been received from Ireland suggesting an extension of the association to that country, as well as to Scotland. The membership roll now includes over 1,400 names.

At Dresden, Staffordshire, on September 20, some twenty students attending the chemistry classes conducted by Mr. Joseph Walker, in connection with the science and art classes, presented their teacher with a very handsome china tea and breakfast set, in token of his painstaking efforts and valuable services. A very pleasant evening was spent, great regret being expressed at the loss the class sustains by Mr. Walker's removal to Liverpool, where he is about to commence business as a pharmaceutical chemist.

We have to record the death of two French specialists whose products have been known for many years in England. One was M. le Dr. Laville, the proprietor of the anti-gout drops and pills, who died at the age of 75; the other was M. Brou de Laveyssière, the inventor of the Injection Brou, a preparation largely sold throughout the world. Both gentlemen were residents of Paris.

On Saturday morning, October 7, Mr. E. C. Pearson, a chemist, residing at Bradford, was found dead in his bed-room. Underneath the body lay the corpse of his son, aged four years. It is supposed that Mr. Pearson had an apoplectic fit, and fell on to his son, who died from suffocation.

Some more milk of sulphur cases have been tried at Belfast lately. The magistrate honestly confessed his utter inability to comprehend the arguments, and he dismissed the cases "without prejudice."

An inquest was held at Leeds on the 5th inst., respecting the death of Mr. Henry Winn, chemist, Dewsbury, who had died from injuries received by being run over by a tramway car. It was stated that this was the fourth death from the same cause in the space of a week. As no blame attached to the driver the jury returned a verdict of accidental death. How many newspaper articles would have appeared if four accidental deaths from poison had occurred in Leeds in the space of a week?

The retiring members of the Irish Pharmaceutical Council have been re-elected, but we are informed that Dr. Bourke, of Limerick, has resigned, and that Mr. Payne, of Belfast, takes his place. At the last examination a hundred candidates presented themselves, but rather more than half were rejected.

The prize of a five guinea microscope, offered by us for the best essay on "Quantivalence," has been awarded to Mr. J. Abernethy, of Belfast.

Through the courtesy of Professor Bedford, of New York, we are able to present a somewhat full report of the proceedings of the American Pharmaceutical Association at Philadelphia on September 12 and following days, together with abstracts of most of the papers read at the sessions.

Better trade and some advance in prices is reported from the drug and chemical markets. An unusual advance has occurred in quinine.

THE FIRST IRISH PHARMACEUTICAL COUNCIL.

WE have known no episode in modern pharmacy so curious as the short history of the events immediately preceding and associated with the formation of the Irish Pharmaceutical Society. The "Chemists' and Druggists' Society of Ireland" was established only in the beginning of 1873. It was promoted by a few Dublin druggists who aimed at getting from the Apothecaries' Company certain concessions which would make pharmacy in Ireland a little less different to all other kinds of pharmacy. The Apothecaries' Company, with one foot on pharmacy and the other on medicine, and a gulf threatening absolute annihilation between, felt itself in a somewhat precarious position. The other medical grades had been seeking for a long time to push off the foot on their stone, and now the druggists had started to work at the other leg. The apothecaries coquetted with their new invaders, who found their task much easier than they had at first anticipated. Standing by was the British Pharmaceutical Society, ready and willing to help if their aid should be invoked, and beyond the Apothecaries stood the College of Physicians, offering both encouragement and inducement to the druggists to proceed. The difficulty of these latter was not in finding but in selecting their friends. This was not all; for the British Government no sooner heard of what they wanted than it came forward, and in the most handsome manner possible promised to do everything, to give Home Rule, other people's titles, reciprocity, if it should be desired, with the English Society, and no trouble at all to Ireland. What is perhaps



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still more curious than all the rest, the British Government actually performed what it had promised, and thus, in only about thirty months after the first word had been spoken, the Irish Pharmaceutical Society was organised by Act of Parliament, under the most distinguished patronage, the agitators had got more than they had ever thought of asking for, and the whole conditions of pharmacy in Ireland were changed.

The first year of official existence has just been completed, and we think the moment opportune, therefore, to present portraits of those twenty-one gentlemen who have laid the foundations of modern pharmacy in our sister isle.

From the first we have so fully reported the formation and proceedings of this new society that it would be mere superfluity if we here entered into a lengthy notice of its constitution and history. All that seems to us necessary in this place is to act the showman in the briefest manner possible, and with this object we shall take our panorama to pieces alphabetically.

Mr. Wm. Allen is a chemist and druggist, of Henry Street, Dublin; Dr. Miles V. Bourke is, no doubt, of Irish birth, but his degree of M.D. comes from Aberdeen—he is a resident of Limerick; Mr. Thomas Collins, surgeon, Dublin, is a member, of the Court of Directors of Apothecaries' Hall, and is one of the representatives of that institution on the council; Sir Dominic Corrigan, the president of the society, we described at some length exactly a year ago; Mr. Wm. Frazer, of Dublin, belongs to the Irish College of Physicians, and is an authority on materia medica; Mr. John Goodwin is a Dublin chemist; Mr. Wm. Goulding, of Cork, is the head of a well-known firm of druggists, and has lately been chosen to represent his city in the British Parliament; Mr. Wm. Harrington, of Cork, represents the apothecaries; Mr. Wm. Hayes, of Grafton Street, Dublin, is a chemist, and acted as secretary to the Chemists' Society; Dr. J. F. Hodges, of Belfast, is Professor of Medical Jurisprudence in the Queen's University of that city, an examiner in chemistry, and an author of several chemical books; Mr. E. M. Hodgson is a member of the well-known wholesale firm of McMaster, Hodgson & Co., of Dublin; Mr. J. T. Holmes is a Dublin chemist, and to him more than to any other member of the council the society owes its existence. His energetic action recently secured for the chemists of Ireland exemption from jury service. Mr. Holmes, we are proud to say, is an Englishman. Dr. C. H. Leet is secretary to the Apothecaries' Hall of Ireland, and represents that body on the General Medical Council; Dr. Rawdon Macnamara is a distinguished practitioner in Dublin, and has also been a lecturer on materia medica at more than one institution; Dr. G. B. Owens is especially distinguished this year as the Lord Mayor of Dublin; Mr. R. W. Pring is an apothecary, and is the principal in the firm of Grattan & Co., of Belfast; Dr. Emerson Reynolds is Professor of Chemistry in Trinity College, Dublin; Dr. John Ryan is another well-known Dublin physician; Dr. Aquilla Smith is another authority on materia medica. This gentleman has also a seat on the General Medical Council, where he represents the King and Queen's College of Physicians of Ireland. Dr. C. R. C. Tichborne is the manager of the laboratories of the Apothecaries' Hall of Dublin, and is also examiner in chemistry in Trinity College, Dublin. This gentleman is of English birth, and he is a well-known member of the British Pharmaceutical Conference, to which he has contributed some of its most useful papers. Dr. Henry Whitaker is a physician of Belfast.

While we have had occasion once or twice to criticise their action, we cannot but admire the spirited and business-like way in which the Irish Council has conducted its affairs. It is a very influential assembly, and we trust the Irish Pharmaceutical Society will long retain the honourable character which so many distinguished men must impress upon its early days.

Pharmacalia.

The great public schools and hospitals have, with some exceptions, inaugurated their reopening by an address.

These discourses vary in their degree of interest, but generally are well worthy of the occasion on which they are pronounced.

The scene at our larger institutions is exciting beyond measure: there is the restless, surging crowd of students, exuberant in the first flush of their young life—noisy in demonstration, but ready to applaud a well-turned sentence to the echo, or to listen in attentive silence when some one talks whose words have power. No foreigner should flatter himself that he knows London life who has not been present at one or other of these celebrations.

Our task is limited to pharmacy, and we must be content to note the opening of the two establishments which are the representative exponents of our art.

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Tempora mutantur, nos et Mutemur in illis. If you cross over the bridge called Westminster you will find on the right the noble hospital of St. Thomas, and further onwards to the left the fine Gothic church which owes its erection to the zeal and popularity of the Rev. Newman Hall. The road before you leads to an unpretentious looking building called the South London School of Pharmacy.

The entrance is neither attractive nor convenient, still less does it give an indication that it leads to a laboratory which may safely challenge comparison for excellence of arrangement and perfection in its details with that of any similar establishment here or on the Continent. The success of a solitary private student led to the creation of a school: for to him succeeded others, until the tranquillity of the household was too much invaded, and comfort as well as poetry dictated that there should be peace at home. The domestic being thus merged into public enterprise, larger and more commodious premises were selected, with the general aspect of which first establishment we were not favourably impressed: the rooms were convenient, but nothing more, and the school began essentially as a training place for examinations. Let us take a just estimate of the situation. Certain official salaried demonstrators at the Square were doing precisely the same thing in practice and by advertisement. The existing requirements of the Board of Examiners were not high: in some departments the questions asked were stereotyped, and could be perused in collated manuscript at leisure. The chief practical test of efficiency (then under the direction of Mr. Davenport), which no ingenuity could surmount, was the reading of prescriptions.

Soon, mere preparation gave place to systematic teaching, though increasing applicants formed a strong inducement to continue the traditions of the institution in the beaten track.

The year previous to the operation of the new regulations about 400 aspirants crowded into the South London school—many to be rejected—others to escape shipwreck by a fluke, but the remainder to be honest students, such as have never been wanting in our ranks. From this date the old mode of instruction vanished, together with the old arrangements: lecture rooms and museums were provided; field botany was introduced, and plants were studied as they grew; and, lastly, the present new laboratory was built.

The plan adopted is to bring every student under the inspection of, and face to face with, the lecturer. The laboratory is fitted up with 50 working benches, each pupil having his own place assigned, from which he is not allowed to move: every appliance, such as gas, water, and fume chamber, is put within his reach, and he is in full view of the lecturer and his experiments.

A raised platform traverses the building from the rostrum to the entrance, so as to bring the teacher and the taught into immediate contact with each other.

The outline of the system is as follows:—

Fifty students work in the laboratory for four hours, from 9 A.M. to 1 P.M., during which time lectures are delivered by Dr. Muter on chemistry and botany, the latter subject alternating with Latin. Close by the door is a box containing cards on which are severally written the names of those following the course.

One is drawn out at the commencement of each lecture, and the student to whose name it corresponds stands up, and is closely questioned on the subject of the previous day. If in chemistry, he must demonstrate his answers by direct experiment, and produce an equation for each reaction on a slate. In botany there is the same rigid questioning. The remaining time is occupied in practical manipulation conducted in silence, and under the personal superintendence of the director. When sufficiently advanced, pupils are engaged in the analysis of unknown compounds and solutions. Their morning labours being ended, these 50 men replace, after a fitting interval, the second class of 50, who have been engaged meanwhile in other lecture rooms.

Their work is now practical pharmacy, and the British Pharmacopœia, materia medica, the recognition of specimens, and dispensing.

Older students undergo a separate course, and are not allowed to mix with the junior men.

They are required to devote the early morning to their private studies, and make their appearance at the school at noon.

They attend a lecture on advanced materia medica from 12 till 1, and then go into the senior laboratory for practical chemistry until 5 P.M.

From 6 till 8 in the evening they attend the lectures on systematic botany, alternated with physics and organic chemistry.

Provision is made for still more advanced students, desirous of becoming regular analytical chemists, at the South London Central Public Laboratory, at Kennington Cross, where the work under the Sale of Food and Drugs Act for nearly the whole of South London is performed daily from 12 till 5.

Such is the sketch of a system in favour of which we venture to express approval. It has been, and must be, successful in meeting the requirements of an authorised board of examiners; it has raised the standard of such requirements; and in addition, it is a thorough, well-grounded preparation for the duties that must devolve upon the educated and scientific pharmacist.

On Saturday, September 16, the school was opened. The weather was uncompromisingly wretched, but there was a bright and effective speech from the energetic secretary, Mr. Baxter; while the sessional examiner welcomed the students who were entering on their career.

He told them that the inevitable ordeal of an examination should be but the stepping-stone to further effort; and that only when their subsequent distinctions reflected honour on the school would its character and its permanence be secured.

* *

"It is our opening day."

Wednesday, October 4, was a day of Indian summer, succeeded by a night of beauty. To City men this is a matter of little moment, but those who arrive from long distances are frequently deterred from the pursuit of knowledge by the elements.

There was a sound of revelry by night—the abode of pharmacy at Bloomsbury Square was lighted up—the museums were thrown open, and the lecture-room was crowded by students, past and present—by visitors and by professors, the latter of whom,

in deference to the fairer section of the audience, varied their reports with pleasant and not undeserved allusions. The occasion was the re-opening of the session and the distribution of rewards to previous successful candidates. Of the silver and bronze medals, certificates, and gifts of books, brief mention must be made. Instead of the fathers shall be the children was strikingly exemplified, and some of our men have anticipated the advice given them in the evening, to roll on the echo of moral and intellectual development to another generation.

We heartily congratulate Arthur William Wheatly on having gained the Pereira medal.

Professor Bontley, the announcement of whose name is always the signal for a demonstration, and who comes from King's College, made his statement. His students had numbered about 120, and 15 candidates presented themselves for examination. For many successive years he had taught botany; his pupils, we are sure, would add that during that period they had learnt the science under circumstances of extreme advantage. The Professor subsequently enlarged on the benefit to be derived from the formation and collection of herbaria—the habit of arrangement and the research involved increased the power of observation, added to the store of knowledge, and led to directly practical results.

Professor Redwood, who had been unavoidably absent at the commencement of the meeting, next bore witness to the satisfactory condition of the class for chemistry and pharmacy. The diminution of the number of the lectures was balanced by their greater length, to each having been devoted an additional half-hour; 60 lectures (the existing course) represented therefore 90 under the old plan. Professor Attfield had received 123 pupils in the laboratory, engaged in practical work for varying lengths of time. Mr. Carteighe, in a few clear and well-chosen words, explained the regulations under which the examination was conducted for the Pereira medal and the council prizes; and at twenty minutes to ten o'clock precisely Mr. Barnard S. Proctor, of Newcastle-on-Tyne, rose to deliver an address.

* *

(*Wolfstan.*) He speaks old words
That have been in my ears these many days.

Our visitor from Grey Street is not unknown either as a pharmacist or as an author. Formerly a diligent contributor to *THE CHEMIST AND DRUGGIST* under its old editorship (iv., 1863), his name appears not unfrequently as a correspondent to pharmaceutical literature, and to the "Transactions of the British Pharmaceutical Conference." He is fond of politics, of pleasantries, and minute practical research. He loves curious calculations and ingenious methods, arithmetic and weights and measures. Self-taught, he has made the best of his surroundings: he has a word of encouragement for those who are situated like himself, and of fraternal greeting to others who have had better opportunities.

In his time he has discoursed about pilulæ (1860), and shown how they may keep their shape; and made 45 experiments on compound rhubarb pills (1862), to explain how they may be coated.

He has warned dispensers (1860) that drops and minims are not terms convertible, nor do the former represent fixed quantities, for that, while one drachm of otto contains 150 drops, one drachm of chloroform contains 250, and hydrocyanic acid has but 54. Diluted hydrocyanic acid occupied his attention in 1874; henbane, its preparation and doses, in 1862. Pessaries and suppositories have formed the subject of two communications—one read as a paper at an evening meeting, the other as a note written in explanation. That tendency to micro-pharmacy which led him to detect $\frac{10}{34}$ of pungent matter in *syrupus zingiberis*, P.L. (1859), and of which his papers give so many illustrations, found appropriate employment in an elaborate

report on weights and measures (1864) used in pharmacy, read at the Bath meeting of the Conference. The investigation was severe and might be termed exhaustive, though the remedy proposed to extricate the puzzled pharmacist from conflicting systems was a flight which the prosaic mind would hesitate to follow.

Good was the short essay on matches and their mode of manufacture, and very characteristic. So also was the note on unclean spirits and the natural orders of men (1862), in which the writer ventured on the sentence: "The keen money-making man, careless of doing his duty to his neighbour, is happy to find this opportunity of doing the exciseman and his duties at the same time."

Once Mr. Proctor fell foul on potash and soda water. He discovered that the first sometimes did duty for the second; and that the latter, as a commercial article, differed from the scientific formula of a chemist's laboratory. Not once, nor twice, in Mr. Proctor's story did he attack the supreme dispensing difficulty of emulsions (1865-1873).

In this research he was inadequately aided by his companions, from whom he had hoped to gain assistance. He did not receive a line from anyone, and thus was debarred from grouping those fragments of information which, isolated, have little value.

Into the political arena we shall not follow our Mentor from the North: he was no silent member during the vexed period of legislation (1864, 1865, *et passim*). There is less reason for reviving these discussions as the Pharmacy Act has definitely settled the points that were under animated discussion. One sentiment of Mr. Proctor's will survive the rest: "For my own part, I should feel that any effort which I have hitherto made for the good of the society would be degraded if I were now to make the society in any way subservient to my personal interest."

In 1873 appeared the author's book entitled "Lectures on Pharmacy." In this volume many scattered investigations were united, revised, and set in order. The chapter on dispensing (pp. 236-308), including an essay on autograph prescriptions, was new (as far as our knowledge goes) to pharmaceutical literature. The proceedings at Glasgow were enriched by two of his contributions on liquid extract of pareira and opium assay.

Such was the lecturer who, summoning the black-board to his help, addressed the students, and this is the summary of what he said.

* * *

"Bid me Discourse."

Mr. Proctor began by stating that to be good boys and learn lessons well was the inevitable drift of an address to students. He feared the depressing influence of too much advice, and would strive in a homely way to avoid formality, and to impart vitality and freshness.

For more than 20 years he had travelled on the road of pharmacy, and it would not detract from the guidance of text books or professors to listen to the tale of one who had experiences on the way-side.

To talk about one's self might seem egotistical and to require excuse—but he wished to make his story a benefit to others, and to talk about what he knew.

Two topics were suggested, the mode of learning and the kind of learning which might be desirable. The learned pig was an example of the lowest grade—it had learnt, but it did not know: the highest grade was to learn, know and understand, and rise to that intellectual faculty which could evolve new truths from old.

Learning was not always knowledge. Facts which had a direct bearing on our daily work should be known so as to be producible; facts of less immediate application should be learnt and understood so as to be referred to when required. That

permanent knowledge is of slow growth his own history would show.

As a boy he liked physics and mechanics, and wanted to be an optician: circumstances forbade, and he began to help his father. Chemistry he liked, not pharmacy, nor its other branches, while Latin was a drudgery. For 12 years his hope was to exchange pharmacy for some more congenial occupation, making the best of it notwithstanding.

In those days local schools of pharmacy were unknown, and an Associate who had passed his Minor was an object of reverence in the town.

He began his apprenticeship with a firm resolve to know his business as well as any man in Newcastle, and he picked up information from every available source. He made the shop his cabinet of materia medica, and labelled the backs of the bottles and drawers with the botanical names and natural orders of vegetables, with formulæ and chemical equivalents. His daily duties, therefore, became a perpetual reminder of the science of his trade.

He would run counter to a common item of so-called good advice, which bade a man pursue botany and Latin for the pleasure the pursuit affords. Rather, he would say, by all means enjoy them if you can; if not, study them conscientiously, and thank Heaven that you can do your duty.

When you study, work; when you take pleasure, sport. "And if you must have a 'Flora' with you, let it not be Babington's or Bentham's, but your sister Flora." When Faraday had a game with children he was at play, and not engaged in high philosophy.

Leaving this digression, the personal narrative was continued. His schoolmaster gave him a certificate which stood in lieu of the Preliminary examination. Having gained his status, he ground up Latin at an evening school, so as to justify the grace awarded, meaning always to finish his education under the training of the London professors. In this he was disappointed, as his services were required at home.

He was compelled to adopt self-help, and commenced systematic study, devoting chief attention to analysis.

So things went on, till in the spring of 1853 he got a ten days' holiday, and presented himself before the Board of Examiners. He met the students at the Square, and worked for two days at the museum. The examiners were roughly criticised by his companions. Squire was reported savage, Dean particular, and Jacob Bell was sulky. He turned a deaf ear to this ignorant conversation, and remembered that a bad student never has a good examiner.

The result was gratifying in the extreme, and he cleared the pass examination for which he had been entered by mistake with honour and much commendation.

Success widened his ideas: he would counsel others not to restrict their views to pharmacy alone, but to let in upon them the liberal air of refined taste and intellectual cultivation.

"Keep a little corner of your soul free from the bricks and mortar of pharmacy; there the daisies will blossom, and your hobby may be turned out to grass."

Strength of will was the power which a student should most covet; the determination that every day should record some definite progress. The necessity for a compulsory curriculum existed only as men fail to be a law unto themselves; they should be their own rigorous task-masters, and if so we should hear no more of crowding effort into a three months' course of study, and converting the brain into a deposit for dry rubbish.

Passing an examination indicated that the successful candidate might be entrusted with the practice of his trade. Activity was life, and it was the mark of an unworthy aim to look forward to an achievement as an end to work and progress. Mr. Proctor then quoted Tennyson's grand song called "Wages," which has been the admiration of the world since it first saw the light in

the pages of *Macmillan*. He proceeded to amplify his former statements, and to show how the trained mind grew to combine, compare, imagine, and to theorise. How imperfectly these higher faculties were exercised in regard to familiar facts he demonstrated by what Sonnenschein calls in his lessons the value of the number nine, pointing to the moral that where numerous scattered facts may be presented they should be arranged in order, so as to find the law of their relation. It was the weak point, observed the lecturer, of our pharmaceutical examinations, as at present constituted, that they tested the power of memory rather than that of thought, judgment and originality.

Mr. Proctor concluded by a direct address to the Square men. The laboratory and the professors were their great privileges, but taken alone they would never make a great man: they even risked dwarfing of great characteristics by bending habits of thought into established forms. Dwellers in little country towns had even shorter hours and more leisure, besides the opportunity of gathering a few indigenous herbs; hence "they stood a good chance of developing individual characteristics, which is a great boon in a world of common-place men, and at a time when individuality is scarce, and every day becoming a scarcer commodity."

Cheerfulness was a cardinal virtue strongly to be commended, and those who had entered the business of pharmacy were neither to be eternally moaning about their status nor ashamed to discharge the duties of their position.

* *

Voici le bel endroit de ma lettre : je finis.—*Séguin*.

Flora now mentioned that it was high time to go: the opinion was correct, and we felt the providence of a latch-key.

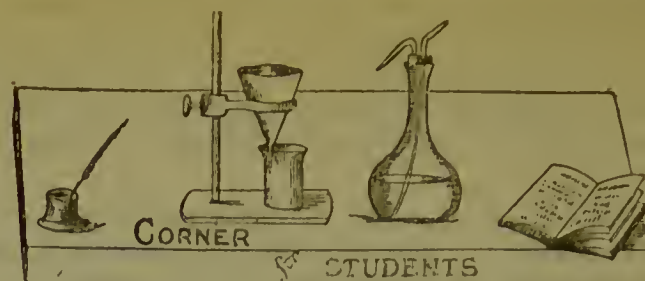
No one minds being late when there is something good to hear, and we liked very much of the above. It was original beyond a doubt—eloquent here and there, and always interesting.

We experience a regretful feeling with respect to the sentences on the general cultivation of the taste and intellect—a regret that we did not write the paragraph ourself. We have so far escaped the influence of common-place as to think, and to say to all comers, that the life of a chemist and druggist which is limited to "the bricks and mortar of pharmacy" is one not worth the having.

We ask the forbearance of Mr. Barnard Proctor when we mention that his statement that the present form of examination does not favour or make allowance for originality, judgment, and the practical, seems to be founded on an imperfect acquaintance with the subject.

Lastly, we look with suspicion on any glorification, direct or indirect, of the ancient seven years' apprenticeship, believing that its duration was unwise, the mode in which it was conducted ignorant, and the value of the duster as a mode of moral and intellectual training exaggerated. We have a conviction that a well-educated youth can learn mere shop duties perfectly in a singularly short period, and that being well-educated he will be less likely to be above his work. To compel him for a course of years, except necessity requires, to perform menial duties is not the way to improve either his disposition or his mind. When no necessity exists, it is to defraud the charwoman and keep herself and children from the chance of an honest livelihood.

Public systematic teaching has for one aim to smooth away some of the difficulties with which Mr. Proctor had to contend and to make the path less irksome. All praise to him for having won his way through. We thank him for the personal narrative of his exertions. To many his words will afford encouragement: many others may well take heed lest with their larger advantages they should be found wanting.



CONDUCTED BY RICHARD J. MOSS, F.C.S.

PRIZE ESSAY.

THE best essay received on Quantivalence is by J. Abernethy, 5 Albion Street, Belfast, to whom the prize has accordingly been awarded.

The subject has received very different treatment at the hands of different students, many of whom dwelt almost exclusively on one particular aspect of the doctrine, without sufficiently considering those broad principles on which it is based.

The essays of some of the less fortunate competitors are highly creditable, but none of them equal Mr. Abernethy's in general merit. We have much pleasure in printing the prize essay.

QUANTIVALENCE.

By J. Abernethy.

Among the theories and generalisations advanced to account for and explain the facts observed from time to time, as the study of chemistry has progressed, the doctrine of quantivalence, or, as it is called by some, "atomicity of elements," has recently assumed an important place, and although some points connected with it are still under discussion, so far as it has been investigated it has led to interesting and valuable results.

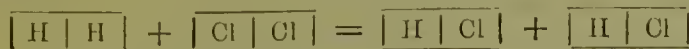
This doctrine has been suggested by the observation that when elementary substances unite with each other they have a tendency to assume certain typical forms of combination, and this tendency is supposed to be due to the different powers of combination possessed by the elements themselves, and the latter, according to these various powers, expressed by the term "quantivalence," have been arranged into six principal groups.

As this subject is not usually brought prominently before the student until he is at least familiar with the more simple and common chemical compounds, it will be convenient to select a few of these for the purpose of illustrating some of the details of this doctrine, and, as the combining value of the atom of hydrogen has been adopted as the standard of comparison in reference to which the quantivalence of other elements are expressed, the following types of compounds containing hydrogen in different proportions will at present be found sufficient, viz., hydrochloric acid, water, ammonia, marsh gas, and ammoniac chloride.

The composition of hydrochloric acid is very simple, it being composed of two elements only. It is formed when equal volumes of hydrogen and chlorine are brought together in daylight or exploded with a lighted taper. If, however, either gas be in excess it remains uncombined after explosion, showing that the two gases only unite in equal proportions, and this is further confirmed by passing an electric current through a strong solution of the acid, when the two component gases, hydrogen and chlorine, are liberated in equal quantities at the two electrodes.

These equal volumes of the two gases contain each an equal number of molecules, according to the general law, "equal volumes of nearly all gases, under like conditions of temperature and pressure, contain an equal number of molecules," and the molecules of hydrogen or of chlorine are made up of two like atoms. According to the doctrine of quantivalence, each of these atoms is supposed to have a certain definite number of bonds or points of attachment by which they enter into chemical combination with other atoms. To represent this idea graphic formulæ are employed, according to which the atoms of hydrogen and of chlorine are represented as having one such bond, indi-

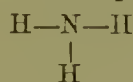
ated by a single line, thus: H— or Cl—; but it will be remembered that atoms do not exist in the free or separate condition, but, when liberated from a compound, unite with another like atom, forming a molecule, represented thus: H—H, or Cl—Cl. The space occupied by either of these molecules is two volumes $\left[\begin{array}{|c|} \hline \square \\ \hline \end{array} \right]$, and when combination takes place between equal volumes of the two gases the result is the formation of a volume of hydrochloric acid equal to that of the gases used. This may be represented thus:—



and more simply still, by representing the acid as being formed by the union of an atom of hydrogen with one of chlorine, thus: H—Cl; and thus we pass from speaking of hydrochloric acid as being composed of equal volumes of gases to speak of an equal number of atoms, and we may learn from the proportional number of atoms of hydrogen and chlorine which form hydrochloric acid that the combining value of the atom of each is the same, and the term "univalent," employed to express the quantivalence of hydrogen, will also denote that of chlorine. These two elements, with bromine, iodine, potassium, sodium, silver, &c., the atoms of which are always observed to exhibit the same power in combination, form the first of the groups into which the elements are divided, and are collectively called monads, and when any two of these elements combine they form compounds of the same type as hydrochloric acid.

In water we have an example of a compound containing another element, viz., oxygen, an atom of which is capable of combining with two of hydrogen. That this is the proportion in which the two elements combine may be shown either by exploding a mixture of two volumes of hydrogen and one of oxygen, when the gases combine and condense in the form of water, or by passing through the latter an electric current, when the two gases are liberated in the above proportions. It is evident, then, that whereas the atoms of hydrogen and chlorine are each represented as having one bond, the atom of oxygen will have two, and the formula of water will be H—O—H. The atom of oxygen, therefore, has in combination twice the value of the monad atoms of hydrogen and chlorine, and as oxygen exhibits the same quantivalence in all its combinations, it is called a "bivalent" element, and with zinc, magnesium, mercury, &c., forms the second group of elements, called "dyads."

If a given volume of ammonia gas be passed through a hot tube, and the product carefully collected, it will be found to consist of a mixture of three volumes of hydrogen with one of nitrogen, which had previously been in combination. The formula of ammonia is, therefore, NH₃, or, represented graphically, thus:



The atom of nitrogen, therefore, is capable of fixing three monad atoms of hydrogen, displaying "trivalent" combining power, but, as will be seen further on, it is not classed as a "triad," the only members of this group being boron and gold. These two elements form chlorides on the same type as ammonia, BCl₃ and AuCl₃.

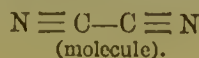
The next substance, marsh gas, is one which is not formed by direct union of its elements, but its composition may be demonstrated by passing the electric spark through a measured volume, when carbon in the solid condition is deposited on the terminals of the battery, while the liberated hydrogen occupies twice the bulk of the original gas, the space occupied by the deposited carbon not being taken into account. The effect of decomposition may be represented thus:—



Before decomposition,

After decomposition.

Accordingly, the formula CH₄ is assigned to marsh gas, and it affords an example of an element the atom of which is capable of fixing four atoms of hydrogen. Carbon also forms other compounds, in each of which its quantivalence is the same as in marsh gas: for example, with four atoms of chlorine it forms carbon tetrachloride (CCl₄); with oxygen it forms carbonic anhydride (CO₂), in which two dyad atoms are united with one tetrad atom; and with nitrogen it forms cyanogen, in which the bonds are supposed to be arranged thus:—

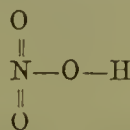


In each case carbon acts as a "tetrad," the other members of this group being silicon, platinum, lead, &c.

We have already seen that ammonia gas contains an atom of nitrogen united with three of hydrogen, and that hydrochloric acid gas contains one atom each of hydrogen and chlorine. If now a beaker of one gas be inverted over a similar vessel of the other, dense white clouds of ammoniac chloride are formed by the combination of the two gases, thus:—NH₃ + HCl = NH₄Cl. The disposal of the different bonds in this compound are represented thus:—

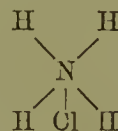


Accepting this evidence of the quantivalence of nitrogen where it is united with five monad atoms, and relying on the existence of other compounds, such as nitric acid

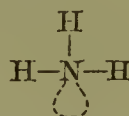


nitrogen has been classed as a "pentad," the various elements being arranged into classes according to the highest quantivalence they are known to possess. The other members of this group are phosphorus, arsenic, antimony, &c., and these elements form compounds on the ammonia and ammoniac chloride type.

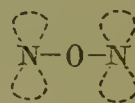
The formula given above for ammoniac chloride brings out another important fact, viz., that the quantivalence of nitrogen is not a fixed and invariable quantity. Thus, while it is a pentad in the above compound, it exerts only triad activity in ammonia, and in some compounds, as nitrous oxide (N—O—N), it acts the part of a monad. But it will be observed that this variation in the quantivalence of nitrogen takes place in each case by the disappearance or development of one or two pairs of bonds, and is explained by the assumption that one or two pairs of bonds belonging to an atom can unite, and, having saturated each other, become, as it were, latent. This condition of an element may be illustrated by the following compounds of nitrogen:—



Am. Chloride.



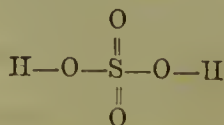
Ammonia.



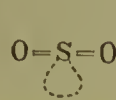
Nitrous Oxide.

In the first case all the bonds of the nitrogen atom are actively engaged; in the second three bonds are active, the curved line showing the condition where a pair of bonds become latent by saturating each other; and the third shows a graphic representation of nitrous oxide, on the assumption that two pairs of bonds of each nitrogen atom are latent, leaving a single bond only of each atom active. The terms "latent" and "active" atomicity are used above in the sense used by Professor Frankland, to which may be added the term "absolute" atomicity, used to denote the highest quantivalence (or atomicity) an element is known to possess.

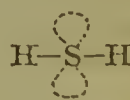
The variation in the quantivalence of nitrogen is not peculiar to it alone, but is observed in the case of many other elements, whose combinations seem to confirm the assumption that bonds do not become active or latent singly, but in pairs, those elements whose highest number of bonds is an even number always forming compounds with an even number of bonds engaged, the like being true of those having an odd number of bonds. As an example of an element whose combining value varies in a similar manner to that of nitrogen, the case of sulphur may be mentioned, three compounds of which are graphically represented below:—



Sulphuric Acid.



Sulph. Anhyd.



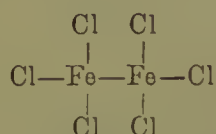
Sulph. Hydrogen.

From these it will be observed that sulphur acts as a dyad, tetrad, or hexad, as distinguished from nitrogen, which acts as a monad, triad, or pentad.

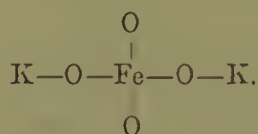
The compounds mentioned at the beginning of the paper,

commencing with the simplest in composition and in type, have enabled us to show progressively the quantivalence of the several elements engaged in them; but before we are in a position to arrange the elements finally into groups we must determine by further experiment and study of all their compounds the peculiarities they exhibit in regard to their power of combining with or replacing other elements. At the same time the compounds selected are suitable from another point of view, viz., that the quantivalence of an element is generally determined by the number of monad atoms which it combines with or displaces from a compound.

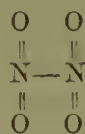
Some elements whose combining power varies in the same manner as that of nitrogen and sulphur form compounds which appear to disagree with the theory of quantivalence: for example, the atom of iron in ferrous chloride (FeCl_2) acts the part of a dyad, while in ferric chloride, the empirical formula of which is FeCl_3 , the iron is apparently a triad, but the vapour density of this compound shows that the above formula should be doubled in order to represent the true composition of the molecule, and that the iron is really a tetrad, as shown by the following formula:—



As having some bearing on this point the circumstance will be remembered that iron is frequently found in nature in the tetrad condition, and that it is capable of exercising hexad functions, as, for example, in potassic ferrate—



As an important exception, which is still a matter of investigation, the composition of nitric oxide may be mentioned. The formula of this gas, deduced from its density, is NO , and as it has been observed that oxygen invariably acts as a dyad, this formula as it stands cannot be reconciled with what has been said regarding the quantivalence of nitrogen. However, a similar anomaly occurs in the case of nitric peroxide: the density of this gas at 0° , compared with hydrogen, shows that its molecular formula should be N_2O_4 ; but as the temperature is increased the expansion of the gas is abnormally great, until at 100° it occupies nearly double its normal volume at this temperature. Then the formula NO_2 represents the composition of the molecule, and it is so expressed by some chemists, while others assign N_2O_4 as its proper formula, making the nitrogen a pentad, thus:—



The explanation that the component atoms of nitric peroxide become separated by the influence of heat, and their chemical affinity partially overcome, producing dissociation or change in physical structure, may be applied to nitric oxide also, assuming that this effect takes place in it at a lower temperature, and this theory affords some reason for representing this gas by the formula N_2O_2 , in which case nitrogen would exert triad quantivalence, thus:— $\text{O}=\text{N}-\text{N}=\text{O}$.

The development of the doctrine of quantivalence has added fresh interest to the study of chemistry, as on this theory many points regarding the composition of bodies which had previously been obscure have been explained, and once the quantivalence of the most familiar elements are committed to memory the composition of many of their compounds may be predicated with certainty. It also finds a useful application in explaining the reactions of organic compounds, the latter being studied on the assumption that they contain nuclei consisting of one or more atoms of carbon, usually combined with hydrogen, and called compound radicals, the quantivalence of these being determined by the number of monad atoms necessary to complete their absolute number of bonds; and these radicals, like the elements, have been arranged into groups called monad, dyad, &c., radicals, according as they combine with one or more atoms of a monad in order to produce saturated compounds.

THE BRITISH ASSOCIATION IN GLASGOW, 1876.

AS a place of meeting for the British Association the city of Glasgow enjoys some rare advantages. The University building, with its modern lecture halls and spacious apartments, could scarcely have been better adapted for the purposes of the association had it been erected with this special object in view. It afforded ample accommodation to all the sections, with one exception—the geographical section—which, however, held its meetings close by the University. Many complained that the University was too far out of town, but it is doubtful if it was a disadvantage to be well out of the way of the noise and bustle of the busy thoroughfares.

The numerous extensive industries that flourish in Glasgow and its neighbourhood afford a rare treat to those interested in the technical arts and in applied science. In this respect Glasgow is unrivalled. Here the various iron industries have found a natural home, and flourish as well as the bad times will let them. Almost every branch of applied chemistry is also well represented in Glasgow, including such modern industries as that of the coal tar products and the manufacture of dynamite. In short, anything in the manufacturing line that can be seen anywhere may be seen in Glasgow.

The surrounding country, moreover, affords numerous sources of attraction to the geologist and mineralogist, while it possesses scenic charms of a high order. Finally, the people of Glasgow, in addition to that warm-hearted hospitality for which they are proverbial, possess every quality that is required to make a meeting of the British Association a success.

The address with which the distinguished president favoured his Glasgow audience was eminently characteristic, strictly scientific, and thoroughly practical. If Professor Andrews' classical researches on the continuity of the gaseous and liquid states of matter have established his reputation as the most eminent condenser of gases, his inaugural address has certainly shown him to be equally worthy of distinction as a condenser of facts. His facts, however, are by no means gaseous: they are unmistakably solid facts. On former occasions we have had addresses with an element of sensation in them, derived from speculations not altogether unscientific; but after all, if we could only see things in their proper light, no speculations are half so startling, half so sensational, as the solid facts of science.

Apart from more interest, an occasional retrospective glance at the recent conquests of science is useful in many ways, especially at the present time, when we hear so much about the backwardness of scientific research in England.

The *Challenger* has only just returned to our shores, after having been for several years most successfully employed in an investigation of which we may well be proud. A long time must elapse before the vast amount of material brought home by this expedition is woven into the fabric of science, but already many important questions relating to ocean currents, the distribution of animal life, and the deposition of rock material, have been satisfactorily answered. Another naval expedition, of a more adventurous nature, is just now struggling with the dangers of the Arctic seas, perhaps already docked in ice for a second dark and dreary winter. These expeditions, and the assistance given by the Admiralty to the numerous transit of Venus expeditions, are surely convincing proofs that science has not been forgotten by at least one department of the Government.

Professor Andrews referred briefly to an interesting discovery that has as yet attracted but little notice in this country—the discovery of the new metal gallium by M. Lecoq de Boisbaudran. It is interesting to note that previous to the discovery of the element, purely theoretical considerations led M. Mendeleef to suggest the probable existence of a metal like gallium in its properties, and having a density of about 5.9; the density of gallium is 5.956. The fusing point of the new metal is remarkably low, being about 30°C . This is the fifth element discovered by means of the spectroscope. It might have remained long unknown but for the refined method of research employed by the discoverer. The spectroscopic examination of the light of an electric spark was long ago employed as a method of chemical analysis, but M. Lecoq de Boisbaudran has brought the examination of sparks taken from the surface of solutions to a surprising degree of accuracy. The chemical conquests of the spectroscope are not, however, purely terrestrial, for this wonderful instrument, so curiously developed out of the researches of Newton, Young, Wollaston, Bunsen, Kirchhoff, and Angström, and a host of other less famous discoverers, has

widened the once narrow limits of chemical science until it embraces not merely the matter of our own earth, but that of the distant stars and the far-off gaseous nebulae. This new branch of cosmical chemistry assures us that no form of matter can be detected in the wide universe that is not already known in this little world of ours.

Professor Andrews observes that "It is often difficult to draw a distinct line of separation between the physical and the chemical sciences, and it is perhaps doubtful whether the division is not really an artificial one." The truth of this statement is illustrated by the researches of almost every distinguished chemist. Almost without exception they have been contributors to physical science. A notable instance of the blending of the two sciences is afforded by that investigation which has led Mr. Crookes to the invention of that curious little heat mill which bears his name. It was in the course of his classical researches on the atomic weight of thallium that Mr. Crookes first observed that a light body, delicately suspended in a Sprengel vacuum, is repelled when exposed to the radiations of a luminous body. By the persevering application of rare experimental skill he has succeeded in unravelling the mysteries of this phenomenon. It must not be supposed that the "radiometer" is the final result of the investigation: in reality it is only a toy—the really valuable facts that have been discovered have as yet received imperfect publicity. The research will eventually form an important contribution to molecular physics. It is worthy of note that Mr. Crookes has succeeded in verifying the mathematical predictions of Mr. Stoney, who has offered a satisfactory explanation of the motion of the arms of the radiometer, based upon certain dynamical properties of gases.

The president concluded his address with observations on university reform, and the endowment of research—subjects of great national importance. The endowment of research is a problem beset with the greatest difficulties. That scientific investigation is an important element in our national welfare is beyond doubt, and it is consequently argued that the country ought to encourage and promote it. The question is, how is this to be done? If we look back on the past, which we can do without feeling much ashamed of the progress that has been made, it does not appear that science would have reaped a much more abundant harvest under any artificial system of culture. The history of our great discoveries shows, as one might expect, that they have been the subjects of a process of natural selection. Often without special training, without opportunities, the talent for research has displayed itself, and produced grand results. In many cases science has been eagerly pursued, out of pure love of it, by men whose daily occupations made research a coveted recreation. In such cases it is doubtful if endowment would be productive of the desired results, for the endowed investigator must pursue science not simply out of pure love of it, but as a means of obtaining his livelihood, and research thus made a necessity would bear a new aspect. It would appear necessary that endowment should be made conditional in some way or other in order to prevent abuse; that it should be discontinued if adequate results were not produced. And as even the most industrious geniuses cannot always command success, the endowed investigator would sometimes find himself in the unpleasant position of courting public favour by exaggerating the value of his work: thus endowment of research would degenerate into research for endowment. A greater disaster could not befall a scheme for the promotion of science. It would be interesting to know what are to be the limits of endowment for the pursuit of knowledge. Are literature and art not worth promoting, or are we to have in the course of time our endowed historians, poets, musicians, and painters—their full time purchased for the nation's good? Religion we have endowed already, and generously enough we pay a variety of churches, each denouncing the errors of the others. It may be a fact, however, that the aggregate result is good for the nation at large. Perhaps the endowed clergyman will think it a grievance if we devote public funds to the propagation of those "dangerous and heretical" views he is so frequently obliged to denounce.

The fact that most of our scientific men who have displayed the genius for investigation are obliged to devote much of their time to teaching has frequently been referred to as a defect in our present system and used as an argument in favour of endowment. There is another aspect in which this circumstance may be viewed, with a very different result. On this point Professor Andrews' opinion commands attention. Having stated his

unwillingness to discuss the subject of endowment as a national question, he said:—

"But whatever may be said in favour of the endowment of pure research as a national question, the universities ought surely never to be asked to give their aid to a measure which would separate the higher intellects of the country from the flower of its youth. It is only through the influence of original minds that any great or enduring impression can be produced on the hopeful student. Without original power, and the habit of exercising it, you may have an able instructor, but you cannot have a great teacher. No man can be expected to train others in habits of observation and thought he has never acquired himself."

There can be little doubt that of the two evils the existing one is the lesser. The loss that science sustains under the present system, if it is a loss, is nothing in comparison with what we might expect to lose were the students of the future to sacrifice the valuable privilege of having great investigators as their teachers. Let research and teaching, then, go hand in hand: there will be no difficulty in trying what can be done towards the purchase of discoveries, without endangering science teaching in the universities. The Government have this year placed an additional 4,000*l.* at the disposal of the Royal Society for scientific purposes. Mr. Jodrell has given this society the munificent sum of 6,000*l.*, whilst the Longstaff fund of the Chemical Society exceeds 2,000*l.* These sums are small in comparison with what might be spent on an organised system of research, but they will no doubt be large enough to test, partially at least, the practicability of endowment on a more extensive scale.

The British Association meetings painfully remind one that although this is the nineteenth century, that great era of wonders, we have not yet discovered any means by which an ordinary individual can be in half-a-dozen different places at the same time. It thus happens that the ordinary individual hears the opening address of only one section, as all the opening addresses are being delivered at the same time. However, by means of a little dexterity, and a good deal of rudeness and disregard for the feelings of sectional presidents and audiences, one can get a sort of mixed idea of opening addresses in general. It was possible to hear something about the solidity of the earth's interior, the transformation of monosulphoanthraquinonic acid into alizarin, the impossibility of reconciling geological and mathematical determinations of the earth's age, the relationship of living things to their environments, and sundry other interesting topics, all in the same hour, but things get desperately mixed up, and the result is, on the whole, eminently unsatisfactory. It is best to control one's feelings and suppress an indiscriminate desire for knowledge.

Sir William Thompson gave Section A some reminiscences of his recent visit to the United States. He referred to a telegraphic instrument which he had heard actually delivering messages in audible words. The apparatus, which is the invention of Mr. Bell, formerly of Edinburgh, Sir William Thompson considers "the greatest by far of all the marvels of the electric telegraph." At one end it consists of a veritable ear, with its membrane capable of communicating the motion derived from sound waves to a piece of soft iron close to an electro-magnet. The electric current is thus made to vary with every alteration of sound. This current transmitted to the distant speaking part of the apparatus imparts a motion to the armature of another electro-magnet, exactly corresponding to the motion of the vibrating membrane, and thus the original sound is reproduced.

Forgetting the sights of the new world, Sir William Thompson plunged mentally into the interior of the earth to solve the problems of precession and nutation. It was not without satisfaction that his audience received the assurance that there is no danger of the earth's solid crust cracking up and sinking into a less dense liquid interior, for there is no liquid interior for it to sink into. But it was not so satisfactory to learn that since March 19, 721 *B.C.*, when a lunar eclipse was observed at Babylon, this old earth of ours has got into the habit of going 11½ seconds slow *per annum*. It is scarcely fair that we should not be able to go ahead as fast as the old Babylonians. It is no exaggeration to say that Section A got through an immense amount of work, much of which was of the greatest scientific importance.

Section B labours under a peculiar disadvantage. It is really too bad, but it appears to be the fate of the chemical section to be always dabbling with sewage. This subject is pretty much

in the same condition now as when Romulus and Remus quarrelled on the banks of the Tiber. No doubt, although legend says nothing about it, the unlucky Remus thought it would be easier to dispose of sewage on the Aventine. The advocates of the different systems will hardly come to any decision as to which is the best way of disposing of sewage unless they appeal to some omen of the gods. A large number of the chemical papers were purely technical; those which were valuable to chemistry as a science were few and far between.

The anthropological department of the biological section had the honour of enjoying a paper which created more sensation than any other that came before the association this year. The paper was by Professor Barrett, of the Royal College of Science, Dublin, "On some Phenomena associated with Abnormal Conditions of Mind." The author gave an account of some experiments which he had made with a young girl in the county Westmeath. The observations which he made, though by no means novel, were certainly of a most startling character. It appears that the girl, in a state of trance, could describe a playing card or a bank note placed between the pages of a closed book, she being carefully blind-folded at the time; and although she had never been out of her native village she could accurately describe the interior of a shop in Regent Street, on which Professor Barrett had, for the time being, fixed his thoughts. Professor Barrett urged that these and similar phenomena to which he referred ought to be investigated by a committee of the British Association. The discussion which ensued only showed how entirely out of place the subject was. It is perfectly clear that, interesting and important as it is, it is not yet in a condition to be introduced to the notice of an association for the advancement of science. Spiritualism—the only name there is for it—is too much mixed up with delusion and trickery to receive public notice from men jealous of their reputations. Nobody will deny that these things ought to be investigated. Men trained in the accurate observation of the most obscure complexities of nature have again and again testified to the existence of these mysterious phenomena. It appears almost rash to question the truth of their observations: surely some of these able men can find time enough to conduct such researches as would at least place the subject on a true scientific basis. It may be impossible, with our present knowledge, to explain the alleged phenomena; surely it is not impossible to demonstrate their genuineness, if they are genuine. When this is done the British Association will no doubt treat the matter as a branch of science. It is a curious coincidence that while Professor Barrett was endeavouring to get the British Association at Glasgow to investigate these so-called spiritualistic phenomena a similar movement was being made in London, but in the latter case, instead of appealing to a scientific society for aid, the strong arm of the law was called into requisition, and the matter placed in the hands of the police, a body not usually entrusted with scientific investigations. This looks serious for the science of the future. The discoverers of new phenomena must be careful in their experiments, or perhaps the country, in its extreme generosity, may give them ample time for philosophic reflection, by granting temporary removal from the trammels of society, and board and lodgings at national expense.

Professor Tait's lecture on force may be regarded as an attempt to show that anything Professor Tyndall says is to be received with extreme caution, because he does not attach the same meaning to the word force as Professor Tait does. The lecturer stated that he felt it his duty to make this attack on the distinguished ex-president of the association because he had given expression to philosophical opinions which tend to undermine some highly-cherished religious beliefs. It would have been well had metaphysics never been introduced into the British Association, for it always leads to endless contentions, and these contentions often arouse feelings which ought to be unknown in men of culture. It is sad to find a scientific man deliberately malign the fair fame of a fellow worker out of purely religious motives. Professor Tait's retaliation took a peculiar form, and, considering how little support he received from his fellow mathematicians, it can scarcely be regarded as a success. Both the president and Professor Stokes, who spoke after the lecture, considered that without greatly multiplying the words of our language, it would be impossible to attach but one precise meaning to such ordinary terms as the word force. There is generally no difficulty in interpreting the particular meaning that is intended by the context. Mr. Bramwell, in his usual humorous manner, mentioned that in

some parts of England the word force means a waterfall, and in the language of burglars the police force is implied.

Sir Wyville Thompson and Commander Cameron were, of course, the heroes of the occasion: they had to talk a good deal about their adventures, of which their audiences knew nearly as much as they did themselves, but of course the "oft-told tales" possessed a charm of freshness from the lips of the real live adventurers.

There is a special reason why we have very little to say about the two conversazioni, which took place on the same evening, one at the Royal Exchange and the other at the Corporation Galleries. The Royal Exchange being nearest our temporary abode, we went there first, but soon heard that science was to be found in a more concentrated form at the Corporation Galleries: it was certainly highly dilute at the Exchange, from which, however, it was too late to beat a retreat, save at the loss of a coat, which had been confidently but rashly entrusted to that bane of conversazioni, the cloak-room. After an exhausting struggle of nearly an hour, a struggle worthy of a better cause, the luckless garment was recovered; but, alas! it was now too late for the Corporation Galleries. The Exchange conversazione had by this time degenerated into a ball; the last traces of science had vanished, as might be expected.

When youth and pleasure meet
To chase the glowing hours with flying feet.

It thus happens that we remember nothing about the conversazioni, but we are still haunted by painful recollections of that wretched cloak-room. The local committee gave another conversazione in the Garden Palace. This was a complete success, even to the cloak-room.

It would have taken weeks to see all the sights the Glasgow people had provided for the members of the association, from shipbuilding and engineering works down to hospitals and lunatic asylums, as well as museums of natural history and technology—a study in themselves. Mr. John Young's private collection of fossils, exhibited in the University Museum, attracted well-merited attention. There was also a splendid collection of fossil fishes from Carlisle Collieries, lent by an anonymous exhibitor. The Kelvingrove collection, though small, is highly interesting, especially the British birds, amongst which there are many rare and beautiful specimens.

The splendid country that surrounds Glasgow was invaded by numerous excursion parties, and the association enjoyed at once the beauties of nature and the most genuine hospitality.

At the last meeting of the general committee there was a close contest between Leeds and Dublin for the meeting of 1878. Leeds made a hard fight for it, but Dublin had sent the cream of its learned societies and university to support the civic invitation, and by a judicious use of argument, savoured with Hibernian wit, the Irish capital gained the day.

On August 15, 1877, the association meets again at Plymouth, when Dr. Allen Thompson, the president elect, will deliver the inaugural address.

American Pharmaceutical Association.

[Our report is written by Professor Bedford, of New York, and is mainly the same, though somewhat condensed, as the report contributed by that gentleman to the American "Druggists' Circular," press copies of his manuscript having been sent to us as they were written.—Ed. C. & D.]

THE twenty-fourth annual meeting, recently held in Philadelphia, was characterised by the largest attendance of its members that ever assembled. Over 300 names were registered as in attendance at the several sessions, and an unusually large number of ladies accompanied them. The sessions were held on alternate days, and evening sessions on Thursday and Saturday, so that the business was closed with the week. Among the interesting occurrences were the presence of Daniel B. Smith, the first president, Henry T. Kiersted, the ninth president, and Peter Williamson, one of the founders of the Philadelphia College of Pharmacy, all now retired from active business pursuits, and each over 80 years of age. Dr. E. R. Squibb, who had not been at the meetings since that at Richmond in 1873, took an active part in the meeting, and also presented an interesting paper.

The papers read will hardly prove of as much interest or

practical value as those offered at some of the previous meetings, but, nevertheless, are mainly of good quality. It is a question whether it would not be wise for the association to adopt some method by which those of its members who might desire to make thorough examinations of such organic or inorganic substances as are likely to lead to important results to pharmacy and its allied sciences would be aided pecuniarily in their efforts. Such a plan has been adopted in the British Pharmaceutical Conference, and the result is to bring forward important and interesting facts. The recent meeting of the Conference, held in Glasgow, September 5, shows the benefit of such aid to investigators.

But to return to the Philadelphia meeting. Wednesday and Friday were set apart as days devoted to the Centennial, and under guidance of several of the local members groups visited the principal objects of pharmaceutical, chemical, and botanical interest, although many preferred to "go it alone."

Other entertainments were also provided including a supper, an excursion, and a *soirée*.

The twenty-fourth annual meeting of the association commenced at the College of Pharmacy, Philadelphia, September 12, 1876, and at half-past three o'clock P.M. was called to order by its president, Professor George F. H. Markoe, of Boston.

Invitations were extended to the members and their ladies to visit the Academy of Natural Sciences, Union League Club, Masonic Temple, and at subsequent sessions from the Pennsylvania Salt Manufacturing Company to visit their works at Greenwich Point, and from the officers of the Zoological Gardens.

Mr. Charles Bullock moved that a committee of nine be appointed to report upon the objects of chemical and pharmaceutical interest now at the International Exposition. After some discussion and amended propositions it was agreed that this committee should, if possible, report within a few weeks, in order that it might be incorporated in the "Proceedings" of this annual meeting, and with this modification it was adopted.

This committee was named by the president, as follows:—Professor J. P. Remington, Philadelphia; James T. Shinn, Philadelphia; Adolph W. Miller, Philadelphia; Professor J. F. Judge, Cincinnati, Ohio; William Saunders, London, Ontario; Professor S. B. Sharples, Boston; Alpheus P. Sharp, Baltimore; John F. Hancock, Baltimore; Professor Emlen Painter, San Francisco.

Professor J. F. Judge moved that on days which were to be devoted to business there be evening sessions, which motion was carried. The reading of the annual address of the president was proceeded with. Professor Markoe gave a review of the past quarter century's work of the association and pleasing notices of the steady advance of pharmacy.

The reception of delegates was the next business.

Mr. Geo. W. Kennedy read the report of the executive committee, giving the statistics of members elected, deceased, and other interesting matters relative to the association.

The report of the permanent secretary was read by Professor J. M. Maisch, and this, with the address of the president and reports of executive committee and permanent secretary, were accepted and referred to a committee (subsequently named) composed of Paul Balluff, J. C. Wharton, and E. H. Sargeant.

The reports of committees being called for, the following were read by title, and were afterwards read in detail:—Drug market, papers and queries, revision of bye-laws, Ebert prize, maximum doses and signs for unusual doses, legislation, adulterations and sophistications, Liebig memorial, metrical weights and measures, photograph album, complaints of Julius Fehr, and the report on the action of the Tennessee College of Pharmacy.

The executive committee presented the names of 76 persons for membership, and they were duly elected.

The delegates then present named each one member to act as a committee on nominations, to which five were added by the president, after which the meeting adjourned, to meet on Thursday at 9 o'clock A.M.

Second Session—Thursday Morning.

The meeting was called to order on Thursday morning at 9.30, Vice-President F. Hoffman in the chair.

The minutes were read, and on motion approved.

Letters were read from the Denmark Apothecaries' Association, Swiss Apothecaries' Society, and the German Apothecaries' Society, thanking the association for the invitation extended to their respective bodies. The letters were referred for publication.

Professor J. P. Remington, on behalf of the committee on entertainment, introduced Mr. S. Nagayo, Mr. H. Meiyake, Mr. S. Juranga, members of the Imperial Board of Health, Japan, and all distinguished men of science, who were received with applause, and invited to seats in the body.

The committee on nominations presented their report, recommending as officers for the ensuing year—

President—Charles Bullock, of Philadelphia.

Vice-Presidents—S. A. D. Sheppard, Boston; George J. Luhn, Charlestown, S.C.; J. D. Wells, Cincinnati, Ohio.

Treasurer—C. A. Tufts, Dover, N.H.

Permanent Secretary—Professor J. M. Maisch, Philadelphia.

Reporter on Pharmacy—Professor C. Lewis Diehl, Louisville, Kentucky.

Local Secretary—Henry J. Rose, Toronto, Canada.

Executive Committee—George W. Kennedy, Pottsville, Pa.; C. H. Dalrymple, W. H. Crawford, John Ingalls, Professor J. M. Maisch.

Committee on Drug Market—William Saunders (London, Ontario), W. H. Wickham, Professor J. F. Judge, Professor N. G. Bartlett, Charles F. G. Meyer.

Committee on Papers and Queries—William McIntyre (Philadelphia), Louis J. Dohme, Joseph L. Lemberger.

Business Committee—Joseph Roberts (Baltimore, Md.), H. S. Wellcome, Charles Rice.

The report of the committee was accepted, and by a vote of the association was adopted.

By request of the chairman Dr. E. R. Squibb and Dr. F. Hoffman conducted the president elect to the chair.

In accepting the position Mr. Bullock tendered his thanks to the members for their kindness, and after a few words of welcome proceeded with business.

The treasurer's report was then called for, and read by that officer. It stated that the receipts during the past year were as follows:—

	Dols.
From members	4,248.00
„ certificates	420.00
„ sale of proceedings	64.80
Balance from 1875	1,174.11
	5,906.91
Expenses and disbursements	4,181.69
Balance in hand	1,725.22

The report was accepted, and on motion referred to an auditing committee of three, which subsequently reported that they found the accounts of the treasurer correct.

It was moved and adopted that the treasurer be authorised to ask for all certificates of membership now held by persons formerly members of this association, but who now retained them contrary to the provisions of the constitution.

Some additional duties of the association in reference to prize essays and keeping a record of State legislation on pharmacy were suggested and adopted.

The committee on maximum doses and signs for unusual doses reported that they had made some progress, but owing to the fact that they had not had sufficient conference with the delegates from the American Medical Association, they suggest that the subject will need the further attention of a committee. On motion, the committee was continued.

The committee on legislation reported, through Professor Maisch, that no great changes had occurred in this department during the past year. In two States the law had been amended. In Baltimore the law permits the sale of patent and proprietary medicines by any one, as also the sale of medicines put up in bottles or packages by wholesale druggists. In South Carolina the examinations were formerly conducted by the medical colleges, but now the board is constituted of four pharmacists and two physicians, and the receipts of the board are divided equally between the Pharmaceutical Association and the medical colleges. No other changes of note were alluded to in the report, which was then adopted.

The report of the committee on the Liebig Memorial, read by Mr. Balluff, stated that the awards for the two monuments had been made, and that all the funds necessary to complete it were in the hands of the Gorman committees. It was moved that the report be accepted, and that the funds in the hands of the committee be returned to the donors, which was adopted.

The report on metrical weights and measures was read by Dr. F. Hoffman. The report recommended that it was feasible, could be adapted for all wants, and that the Government should fix a time after which it should be the legal standard of the country.

Mr. T. S. Wiegand, one of the committee, read a short note stating his reasons for signing the report, also giving other reasons why he was not in full accord with all its conclusions. On motion, both reports were directed to be published in the "Proceedings."

The committee on photographic album reported that the association now had the photographs of over 400 of its members. It recommended that the care of the album should be entrusted to the chairman of the committee.

On motion of H. J. Menninger, it was decided that the permanent secretary should have charge of the album, and that the committee should be discontinued.

A committee, appointed to investigate some complaints made by a certain Mr. Julius Fehr respecting some of the officers, presented a report. The report stated that the committee had examined the several complaints made by Mr. Fehr, and did not think he had any just or reasonable grounds for dissatisfaction.

Mr. Fehr continued the discussion, which became somewhat warm. Ultimately a motion by Dr. Squibb was carried by 106 votes against 19, expelling the troublesome member from the association.

Dr. Squibb offered the following resolution:—

Resolved, that the American Pharmaceutical Association devote an hour of its third session to a discussion of its interests in the United States Pharmacopœia, with a view to the adoption or rejection of the following resolution:—

Whereas, by action of the American Medical Association at its recent meeting in this city, it is proposed to discuss at its next meeting in Detroit in June, 1877, a proposition for that association to assume the control of the National Pharmacopœia:

Therefore resolved that this association offers to the American Medical Association its hearty co-operation in the work in any way that the American Medical Association may find the services of this association most useful. Resolved, that a copy of this preamble and resolutions, with the discussion had thereupon, be forwarded by the president of this association to the president of the American Medical Association. The body then adjourned.

Third Session—Afternoon.

The association was convened at half-past three o'clock, and on motion the reading of minutes was dispensed with.

A vote of thanks was unanimously tendered to the retiring officers.

Daniel B. Smith, of Philadelphia, the first president of the association, and Peter Williamson, an old original member of the Philadelphia College of Pharmacy, were introduced to the members, and invited to seats on the platform.

The resolution of Dr. E. R. Squibb on Pharmacopœia revision was now called up and read, and considerable discussion ensued as to the mode of revision and the proper parties to whom such work should be entrusted. Much interesting discussion followed, and Professor J. F. Judge offered the following:—

Whereas, at the time of the formation of the United States Pharmacopœia the method adopted for that purpose, and subsequently continued for the revisions of the same was adapted to the then existing conditions of the medical profession and apothecaries of the United States, and that the time has arrived for the use of better and more perfect means for accomplishing the revision of that important work. And whereas the pharmaceutical profession has advanced to a position, and by its great interest in the Pharmacopœia is entitled to take a prominent part in the revision of the same, therefore

Resolved,—That this association invite the American Medical Association to co-operate with us in said revision, and that they appoint a committee to act with our committee in conducting said revision.

After some further discussion, Professor Bedford proposed to amend the resolution (which was accepted by Professor Judge) as follows:—

Resolved,—That this association will willingly co-operate with the American Medical Association in the work of revising the United States Pharmacopœia.

Dr. Squibb stated that the object of introducing his resolution was simply for the purpose of explaining the proposed plan of revision which had been made by him at the American Medical Association, as he had just done in this body, in order to acquaint the members with the views of medical men, as well as his own views, and to elicit the views of members on this important matter, and not with any desire to have action at this annual meeting upon the subject, but that all action be

deferred until the meeting next year. The whole matter was then laid over in accordance with this suggestion.

Mr. O. Eberbach read the report of the committee on adulterations and sophistications. He stated that the committee had not found much new or interesting to communicate, and that his report mainly relied upon the selections which he had been able to make from the various journals. Selections of the report were read, and on motion it was accepted and referred for publication.

Mr. D. C. Robbins made a few remarks on the subject of reported analyses, which were sometimes of doubtful value.

Some committees were appointed, and the association then adjourned to eight o'clock P.M.

Fourth Session—Evening.

The meeting was called to order at 8.30 p.m., and was occupied chiefly with the reading of papers.

Fifth Session—Saturday Morning.

At the opening of the session the minutes of the fourth session were read and approved.

The chairman of the business committee offered the following resolution:—

Resolved,—That the executive committee be instructed to carefully revise the proceedings of this meeting prior to publication, and to expunge therefrom every irrelevant word, and every word conveying any personal imputation."

After some discussion the motion was adopted by 51 yeas to 30 nays.

The following proposition was offered by Mr. C. L. Eberle, to be added to chapter 7, article 10:—"A motion to expel a member of this association shall be laid over until the session next succeeding that at which such motion was made." The proposition was laid over for future action.

The committee to select a time and place for the next meeting reported that they recommend it be held in Toronto, Ontario, Tuesday, September 4, 1877, at 3 o'clock p.m.

The report was unanimously adopted.

Mr. Shoemaker read selections from the report of the committee on the drug market.

The report alluded to the changes in values, amount and character of many of the articles used in the wholesale trade.

It was stated that the total imports for the fiscal year were \$476,000,000, while the total exports were \$596,000,000, leaving a balance in the national favour of \$120,000,000.

The character of many of the powdered drugs of the market was alluded to, and their quality hinted at by the comparative prices at which they were sold and the value of good crude drugs. Borax was exported to the extent of 3,000,000 lbs., while California and Nevada have produced in all during the year 6,000,000 lbs.

The Pacific Coast has furnished during the year 54,000 flasks of mercury, while less than that has been produced by all the other nations of the world combined. The product of opium was stated to be smaller in amount for the year than was anticipated, and it would probably advance in price still further. Many other interesting subjects were touched upon. The report concluded with a list showing the import of drugs during the past fiscal year. It was accepted and referred for publication.

Professor C. L. Diehl read a portion of his annual report on the progress of pharmacy. The portion read was but the introduction to the report proper, and it is quite fair to anticipate that it will in its details be fully as interesting and valuable as those of preceding years.

Some papers followed, until the conclusion of this session.

Sixth Session—Afternoon.

The meeting was called to order by Vice-President S. A. D. Sheppard at 2.45 P.M. The reports of the committee on president's address, the executive committee and permanent secretary, as also of the auditing committee, were read, accepted and approved.

Henry J. Rose, of Toronto, Ontario, was elected local secretary at this session. The session was devoted mainly to the reading of papers.

Dr. Fred Hoffman introduced a neat and low-priced microscope, which he stated was made under the supervision of Dr. Hager, and offered for sale in New York for about \$20: he thought it was a valuable instrument for students. Remarks were made by Professor Sharples and Charles Bullock adverse to the use of such instruments, on the ground that they were

not always uniformly good, and that they lacked that reliability and usefulness that better instruments possess. Other members favoured such an instrument as useful for the preliminary practice of students.

Seventh Session—Evening.

The President called the meeting to order, and the minutes of the previous session were read and adopted.

This was the concluding session. The remaining papers were read either in full or by title, and after some hearty complimentary votes had been passed the association adjourned till next year.

ABSTRACTS OF PAPERS.

SENEGA ROOT.

QUERY 1.—An essay on senega root, embracing the history of its introduction, its geographical range, and its importance as an article of commerce.—*J. D. Wells, Cincinnati, Ohio.*

The writer stated that the name of the root is derived from an Indian tribe at one time in Virginia, who held it as a remedy against the bite of the rattlesnake. This secret was obtained by Dr. Tennant, of that State, in 1735, and he subsequently received a reward from the State of Pennsylvania for making it known. Its geographical range is as far north as Canada, along the western slope of the Alleghany, in Indiana, Kentucky, Virginia, North Carolina, Georgia, Tennessee, Alabama, and Texas, scarcely found in Missouri, but abundant in Iowa and Minnesota, and not known to exist in the extreme western territories or on the Pacific coast. The exports are difficult to determine, but the writer was informed by a New York House that over 2,000 lbs. were annually exported.

After the reading of this paper attention was called by Mr. W. Saunders to a so-called senega root of handsome appearance, which, when chewed, failed to produce the full and decided taste peculiar to *Polygala senega*, and when made into a fluid extract gave a liquid possessing a more feeble taste, and having a decided fluorescence.

SYRUP. FERRI IODID.

QUERY 8.—Five grains of citric acid added to the finished product for the formula of the U. S. P. for syrup of ferrous iodide seems to preserve *unchanged* the appearance of the syrup. Is this addition admissible?—*Dr. Wilson R. Pile, Philadelphia.*

The experiments of Dr. Wilson R. Pile, in answer, failed to satisfy him as to the value of citric acid as a preservative for this changeable syrup, and his paper showed chiefly a negative result.

Discussion which followed gave more favourable results as to the tendency of citric acid to protect this syrup from its proneness to change.

PAULLINIA SORBILIS.

QUERY 9.—*Paullinia sorbilis*—a treatise on this article furnishing a formula for a liquid preparation of the drug.—By *George W. Kennedy, Pottsville, Pa.*

In exhausting this drug the writer selects a menstruum containing two parts of stronger alcohol, and one part each of glycerine and water, which, when mixed, give nearly the strength of dilute alcohol.

Paullinia, in moderately fine powder	16 troy ounces
Stronger alcohol	8 fluid ounces
Glycerine	4 fluid ounces
Distilled water	4 fluid ounces

Proceed by careful percolation to obtain 12 fluid ounces (adding above the magma, as may be necessary, dilute alcohol), which set aside, continue the percolation until exhausted, evaporate the second percolate to 4 fluid ounces, and mix with the reserved percolate.

In the hands of the writer this method produced results entirely satisfactory.

COTTON-ROOT BARK.

QUERY 11.—The fluid extract of cotton-root bark occasionally gelatinises on keeping. Can a modification of the process for making this fluid extract be suggested which will prevent such a change? To which principle, and to what influences, is it due, and has the bark of the green root any superiority over that of the dry in the preparation of the fluid extract?—By *J. U. Lloyd, Cincinnati, Ohio.*

The writer details many very careful experiments in the manufacture of fluid extract of cotton-root bark, both dry and fresh. He gives preference to an alcoholic menstruum, but obtained satisfactory results by preparing an extract which, in his experience, *never gelatinised*, when the menstruum used was alcohol ten parts (fluid) to glycerine six parts (fluid). Numerous trials by physicians indicate plainly the *unreliability* of any preparations made from the dried cotton bark. On the other hand, when the *fresh* bark was used, and a fluid extract made from this was tried carefully by a large number of physicians, the almost universal report was favourable, the action being to facilitate parturition, and in other cases where it was sought to re-establish suppressed menstruation it scarcely ever failed. His conclusions, therefore, point clearly to the use of the *fresh bark only*.

AQUA CINNAMOMI.

QUERY 17.—Is the oil of Ceylon cinnamon used in the preparation of cinnamon water, as directed by the U. S. P.?—By *Edward C. Jones, Philadelphia.*

In response to this query, the writer stated the almost universal practice of pharmacutists was to make this preparation from oil of cassia.

THE ITCHING PROPERTY OF SQUILL.

QUERY 18.—The ground bulb of *Scilla maritima* when moistened with diluted alcohol and worked with the hands causes for a time an intolerable itching. To what principle in the bulb is this effect to be ascribed?—By *Edward D. Chipman, Philadelphia.*

The writer separated the acrid bitter principle, as also the resinoid matter, from fresh and green squill, and concludes that the itching effect alluded to is due entirely to the resinoid matter.

Professor Maisch remarked that it is stated that squill root contains oxalate of lime in fine sharp crystals, and that it is thought by some that the itching is caused by the abrasion or cutting of the skin by these sharp crystals.

PURITY OF PHOSPHORUS.

QUERY 26.—The phosphorus of commerce is often contaminated with arsenic. In what proportion is it present in the various brands of phosphorus found in the American market?—By *Louis Dohme, Baltimore.*

Mr. Dohme stated that he had examined the brand of phosphorus made by Gibbs & Deacon, of Mount Holly, N.J., and also two samples made by Albright & Wilson, of Oldbury, England, one of the samples being quite recent, the other being probably several years old. By careful examination, the details of which are given in his paper, he states that the American phosphorus gave no signs of arsenic with the most careful tests, while samples No. 2 gave .562 per cent. and No. 3, 1.066 per cent. of metallic arsenic.

AN OFFICINAL PERFUME.

QUERY 29.—Is it advisable to have an officinal aromatic spirit that will represent a fine refreshing Cologne to be used in lotions and for the sick room? If so, give a formula and name for the preparation.—By *George Leis, Laurence, Kansas.*

The writer came to the conclusion that any aromatic spirit to be grateful in the sick room must be devoid of odours that are too sweet, and thinks that a plain odour is more lasting in its usefulness for the sick room. He therefore proposes a spirit in which bergamot, cassia, and lavender are the odours. In connection with its intended use in the sick room, he deemed it absolutely necessary that it should contain some ingredient which should act as a deodoriser and preventative of foul odours. This would indicate an addition of some of the well-known disinfectants or deodorisers, and he thinks the addition of salicylic acid accomplishes the purpose. The formula contributed, included, therefore, this acid to the extent of ten grains to the ounce of the perfume given. The name proposed was "*Lotio Antiseptica Fragrans*," which would, he thought, sufficiently indicate its character and uses. The best results were to be obtained by freely using it as a "spray" in the sick room.

TINCT. FERRI CHLOR.

QUERY 31.—What advantage is there in retaining alcohol in tinctura ferri chloride? Would it be desirable to introduce

liquor ferri chlor. dilut. of the same iron strength in place of the tincture?—By *M. S. Bidwell*, Elmira, N. Y.

The writer concludes from his investigations that a watery solution would not be as acceptable to the medical faculty; that it would take too much trouble and time to introduce, but favours the reduction of the alcoholic strength to correspond to dilute alcohol.

LACTO-PEPTIN.

QUERY 32.—What is lacto-peptin?—By *Emil Scheffer*, Louisville, Ky.

The writer's careful experiments are detailed in full in his paper in reply to this question. It will be sufficient to say that, taking the published formula as stated on the label and trying the experiments suggested by the makers, they fail to prove or produce the results claimed. The digestive power of the powder proves the presence of pepsin, and as coagulated albumen is dissolved to lacto-peptin the presence of pepsin is confirmed. Pancreatin in dilute alkaline solution, when added to a small quantity of neutral lard, will produce acidification. Pancreatin is coagulable by heat, but neither of the above results are found when lacto-peptin is tested in a suitable manner. When starch paste was used it was not converted into sugar by lacto-peptin, and it fails to prove the presence of diastase. The careful experiments of Mr. Scheffer prove the presence of pepsin, sugar, lactic acid, hydrochloric acid, starch, cellular tissue, mucus and fat, but *no pancreatin nor diastase*, and that it is inferior in digestive strength to the saccharated pepsins of the market.

WINE OF TAR.

QUERY 34.—A convenient working formula for wine of tar, with samples of product.—By *Charles A. Heinitsh*, Lancaster, Pa.

The formula given by the writer, which proved very satisfactory, and most easily prepared, was to take eight ounces of tar and add it to three pints of beer, which after twenty-four hours may be separated for use. Several other formulæ are given, but where *wine* is desired one and a half troy ounce of tar is triturated with one-half troy ounce carbonate of magnesia and one pint of sherry wine, and afterwards filtered.

ON PHOSPHORUS AS A REMEDIAL AGENT.

By *Edward R. Squibb, M.D.*

This paper opened with very full accounts of the reputed therapeutic properties of phosphorus as stated by various authors. Both sides of the question were fully drawn from, and the comments of the writer were mainly as to the character of the formulæ for its administration. He does not advocate, but rather rejects, the idea of giving it in the form of pills or in volatile liquids, and maintains that a fixed solvent, such as some of the oils, is the most appropriate. His own preference was for cod liver oil as a vehicle, and his careful experiments are detailed, giving full particulars of the mode of treatment by which it is freed from air during the process. The preparation does not keep well in quantity, nor should it be kept long. The solution exhibited was stated to contain 1 per cent. of phosphorus. Pills may be made from this oil, and some were exhibited, and their formula was described. In these pills there can be no possible separation of phosphorus in solid form.

AMMONIACAL GLYCRRHIZIN.

By *Henry N. Rittenhouse*.

The writer follows the details of a paper published in the *American Journal of Pharmacy*, September, 1875, with the exception of the final solutions in alcohol and precipitation with ether, which adds unnecessarily to the expense. Attention is called to this excellent preparation for masking the taste of quinia either in powder, pill, or solution. Ammoniacal glycyrrhizin is sixteen times as strong as liquorice root, and one hundred times sweeter than sugar.

NOTES ON PANCREATIN, DIASTASE AND PTYALIN.

By *Emil Scheffer*, Louisville, Ky.

The assertion of the writer at Boston last year, that pancreatin in presence of acidulated pepsin is destroyed, is confirmed by subsequent experiments. As diastase is found in malt in a neutral state, and both pancreatin and ptyalin are secreted in a

neutral or alkaline state, it is to be pre-supposed that these are the natural conditions under which they act.

Hydrochloric acid impedes the action of diastase upon starch, and destroys it. The experiments detailed by the writer with this acid prove conclusively that the presence of a small quantity of the acid so far destroys diastase that starch is not changed into sugar. Pepsin converts diastase into peptone, and in an acidulated solution of pepsin diastase cannot convert starch into sugar. Freshly secreted saliva alters starch paste into sugar, but when a minute quantity of acidulated pepsin is added no such change occurs. Other concurring experiments led the writer to a firm conviction that, in the presence of acidulated pepsin, all albuminoids are converted into peptone.

RYCNANTHEMUM LINIFOLIUM.

By *Charles Mohr*.

This plant is used in Alabama for debilitated and impaired conditions of the digestive organs by the negroes of that section. In attempting a chemical examination the author obtained an acid which by all the tests given appears to be identical with caffeotannic acid. Besides this acid were found a volatile oil, a caoutchouc-like resin, chlorophyll, a bitter resin, colouring matter, gum and sugar. The writer gives also a very complete botanical description of the plant itself.

MICHIGAN OPIUM.

By *Joseph P. Remington*.

The writer, having recently received some of this article, took the trouble to examine it. Its physical properties pointed to a product like extract of lettuce, and on fully examining it no morphia whatever was found.

ERGOTIN.

By *Charles L. Mitchell*.

The writer stated some of the physiological and chemical reasons which led him to deviate from the published formulæ in making an active, solid extract to represent the medicinal virtues of this drug. The product of the following formula yields a result in *every way* satisfactory:—

Ergot, in fine powder	..	..	..	..	..	8 troy ounces
Acetic acid	..	..	..	..	..	2 fluid drachms
Alcohol	..	..	..	..	..	4 fluid ounces

Moisten the ergot with a mixture of the acid and 8 fluid ounces of water; let it stand 24 hours; pack in percolator, and exhaust with water; evaporate to 4 fluid ounces, add the alcohol, let it stand several hours, filter and evaporate to an extract. Result, about 480 grains; 1 grain is equal to 8 grains of ergot.

ON ADULTERATION OF MILK AND TESTING FOR ITS PURITY.

By *S. P. Sharple*s.

Without claiming originality, the following process is given as entirely satisfactory. The specific gravity being first determined, five grammes are weighed out in a flat platina dish, and dried by water bath for one and a half hour, at a temperature of 212° F.; then by an air bath at 220° F. for one-half hour, when weight will be constant. The weight of the dish and contents deducted from the weight of the dish and milk together, gives the total weight of solids. The dish is then treated with benzine for one-half hour, and the operation being carefully repeated twice, it is dried for half an hour, till the weight is constant. The weight of the dish and contents deducted from the last previous weight gives the weight of the fatty matters. The dish is now heated to ignition, its contents are converted into ash, and the weight of this is ascertained. These determinations are all that is necessary to settle the question of the purity of the milk. If sugar is required to be determined this may be accomplished by a test solution of copper tartrate of such strength that 20 cc. of the solution = 0.67 gramme of milk sugar. The above examinations give the weight of *milk solids*, the weight of *milk solids not fat*, the difference between these weights of *the fat*, the weight of *ash*, and that of the sugar. The addition of the weights of fat, sugar and ash, deducting these from the weight of the milk solids, gives the weight of casein and albumen.

GRADUATED MEASURES.

QUERY 38.—An examination into the accuracy of the graduated measures supplied by the jobbing druggist or manufacturer.

Which are the most reliable?—By *Professor S. P. Sharples*, Boston.

The reply to this question is designed mainly to show that the conical form of graduate is the most unreliable form of measure, and the superiority of cylindrical vessels of narrow width. No special examinations were made by the writer, but the paper is based entirely upon theoretical grounds; and in this phase only of the question was any attempt made to answer it.

EMULSIFICATION.

QUERY 39.—How much acacia is needed to emulsify perfectly the fixed or volatile oils and balsams?—By *E. Gregory*, Lindsay, Ontario.

Mr. Gregory gives several detailed processes of manipulation, as laid down in the various works that come under the notice of pharmacologists.

His judgment is that three parts of acacia are needed to readily emulsify volatile and fixed oils and balsams, and that mucilage which is kept ready made is not as good as that made freshly for the purpose. The process of manipulation preferred is detailed in the *Druggists' Circular*, December, 1874, in which powdered acacia one part is mixed with two parts oil, and water one and a half parts afterwards added at once. Numerous other experiments are given; but this in his hands has proved most rapid, the whitest, the oil globules most readily divided, and the emulsion longest retained in intimate mixture without separation.

CACHETS MEDICAMENTEUSES.

QUERY 40.—An essay on wafers for the administration of powders, including mode of manufacture, working formula, and samples of product.—By *G. A. Zwick*, Covington, Ky.

The practical reply to this question is that to manufacture the wafers it is necessary to have a fine quality of wheaten flour as a first indispensable. This mixed with water to a cream, strained and poured on hot polished steel plates which have a suitable concavity on one plate, with corresponding projection on another plate to match. The wafer is then baked, and afterwards cut to the approximate size by a suitable steel cutter made like a gun-wad cutter.

The imported wafer has a superiority in thinness, tenacity, and appearance, which is believed to be due mainly to the Hungarian flour used abroad.

CACAO BUTTER.

QUERY 44.—There is reason for believing that our oleum theobroma is largely adulterated. How can adulterations be detected, and to what extent do they exist?—By *Gustavus Ramsperger*, New York.

The writer prepared cacao butter by expression, by ether and by bisulphide of carbon, as a standard and for the application of tests. The specific gravity of the three samples, though made from the same cacao fruit, was not uniform; therefore the sp. gr. cannot be considered a test.

Pure cacao butter is soluble quickly in two parts of ether at the ordinary temperature, forming at first a clear solution, but after awhile it sometimes separates into two layers. Ether was found to be the best test of pure cacao butter, as if small portions of tallow, wax, or paraffin, be in combination, the substance will not give a clear solution in two parts of ether. Ox marrow is not thus affected, but gives the same clear solution as does cacao butter. Of twelve commercial samples tested nine were pure: the other three were not much adulterated.

SANTONINE.

QUERY 50.—Santonine has been seen in the market in thick prisms, very different in appearance from the usual flat crystals. Is this due to crystallisation from a different liquid than that generally used?—By *O. Eberbach*, Ann Arbor, Mich.

The writer operated with alcohol, dilute alcohol, water, benzole, rectified fusel oil and ordinary fusel oil, and finally concludes that the differences in the form of crystals are due mainly to the quantities of santonine operated upon, and the condition under which the crystallisation takes place. The crystals obtained from fusel oil bear some resemblance to the form in question.

THE STAMBOUL DRUG BAZAAR.

WORDS, like statues, pictures, and other works of art, are rarely moved from one country to another without undergoing a certain amount of more or less serious damage. Sometimes it is an etymological head, leg, or arm that sustains injury, at others it is a figure that becomes so chipped and worn that it presents the appearance of a more shapeless mass, or else what was once a most striking onomatopoeic likeness becomes distorted beyond all chance of recognition. An excellent example of the manner in which words suffer during their transference from one language to another by certain literary Pickfords may be found in the Persian word *bazar*, which, according to etymologists, was first introduced into Europe from the East by the French some two or three centuries ago. Our Gallic neighbours have long been celebrated as most inefficient word carriers, and as it usually happens with similar exotic additions to the French language, such as *sportmen*, *wagon*, and *puff*, it was adopted with a distorted signification which has stuck to it ever since. We ourselves, however, are not wholly free from blame in the affair, for when we imported it from France still clothed with its false meaning we made matters worse during its passage across the Channel by contorting its spelling into *bazaar*. In the East a *bazar*—or, to comply with the bidding of that corrupt tyrant, custom, and above all not to offend the orthographical susceptibilities of the printers, a *bazaar*—is a periodical market held at a particular spot, generally once a week. Thus, at Constantinople we have the *Pershembeh*, or Thursday bazaar, which was at one time held in the street of that name at Galata, the Frank business quarter of the city. The necessities of traffic have caused the removal of the bazaar to a wider and less frequented thoroughfare, but the name still remains, and from the number of banking houses and insurance offices which this street contains it may well rank as the Lombard Street of Galata. At Tophaneh, another suburb of Constantinople, situated on the shores of the Bosphorus, we have the *Salih*, or Tuesday bazaar, which gave its name to the beautiful little palace which was inhabited by the Prince and Princess of Wales during their sojourn in the "Abode of Felicity," as the Osmanlees love to term their beloved capital. At these bazaars every imaginable object that is portable may be obtained at a cheaper rate than in the shops. If your purse is only long enough you may have an Armenian porter, a patient two-legged camel, with a leather hump, living only on olives and water, and you may carry off with you your fill of Manchester calico, Bagdad Korans, Dutch sugar, Persian tumbeki for smoking in your hubble-bubble, matches to light it with from Bow, a melon from the Archipelago to refresh you on your way, some biscuits from Reading, a dab of caviare from the Danube, and a Birmingham padlock to ensure the safe-keeping of all your treasures. The so-called bazaars of Stamboul, which have been described times out of number by the countless herds of scribbling tourists that infest Constantinople, are permanent buildings, and each is devoted to the sale of one particular kind of article, the proper Turkish word for them being *tcharshi*, a term for which Turks are indebted to the Persians. To cut etymological matters short, Brokers' Row, Covent Garden, Billingsgate, and the Dead Meat Market would form excellent examples of *tcharshis*, while the New Cut, Lambeth Walk, and Whitechapel Road on Saturday nights would be equally good specimens of true *bazars*.

This somewhat digressive discourse on philology has served to bring us to the Stamboul side of the bridge which crosses the Golden Horn and joins that portion of the city with Galata, the business quarter *par excellence*. We are at once met by a serried mass of Hebrew *ciceroni*, who guard the *tête-du-pont*, and clamorously insist on carrying us off against our will to bazaars and mosques which we do not want to see. A threat, however, to have recourse to the great stick argument soon sends them off to attack fresh parties of invaders. The square in front of us is the general place of execution for Stamboul malefactors, and the beautiful mosque which towers above all is the Yeni Djami, or so-called New Mosque, built by the mother of Mahomet IV., some 200 years since. Crossing the square to the right-hand corner we pass down a street running parallel with the water, and consisting mainly of poultry-shops and fruiterers' shops, and taking the first turning to the left, half a minute more brings us in front of the heavy stone portals of the building we are in search of—the Drug Bazaar of Stamboul, which, so to speak, is an outlying dependency of the great mass

of bazaars farther away from the water. For this reason it is comparatively unknown, being rarely visited by tourists and book manufacturers, who almost invariably fall into the hands of the Hebrews aforesaid, and obey them implicitly.

The entrance to the drug bazaar is through a massive stone arched gateway, which is closed at night with heavy iron doors. Across the entrance from side to side there generally hangs a chain just high enough to miss your hat, and supported in the middle by another hanging from the keystone of the arch above. This is a sign that no horses are allowed to pass: the drug bazaar, therefore, unlike many of the others, must be visited on foot.

By the Turks themselves the drug bazaar is called *Inissir Tcharshissi*, or Egyptian market, most drugs having formerly been imported into Turkey from Egypt, Arabia, Persia, and India, through Alexandria. It was founded in 1560 by Soleyman the Legislator, and was at first erected in wood, but having been burnt down several times, the present construction was rebuilt in stone in 1609 by Ahmed I. It forms an arched, covered street, about 150 yards long by 20 yards wide. The arched roof is pierced with skylights, which admit plenty of light, but no sun. The interior being very high, there is always a deliciously cool draught playing through it, which, combined with the pleasant smell of the odoriferous gums and other drugs, causes it to be greatly patronised by hot wayfarers going to and from the Ministry of War, high up on the top of the hill above it. The walls above the stalls are tricked out with arabesques and other designs, said to be due to the pencil of the great Calfa, the architect of several of the principal mosques, and who was the Sir Christopher Wren of his age, but they are hardly worthy of his reputation. On the end walls the first thing that attracts our attention are two gigantic characters something like a pair of gawky 9's, with very curly tails, crossed cypher fashion. These are two Arabic *waws* or *v's*, and represent the sacred name *Yahowah* in Arabic, which is the same as the Hebrew Jehovah. Beneath them are inscriptions taken from the Koran, and written in the ancient Koufic character, which are simply an extension of the old well-worn formula that a healthy mind is the usual concomitant of a healthy body. The shops are stalls about 12 or 14 feet in length and 10 or 12 feet in depth. The counters are arranged in steps, upon which the various drugs are arranged in boxes, bags, or bottles. Others, again, such as dried plants, are hung from strings, and the more precious articles, such as otto of rose, oil of jasmine, &c., are kept in a little den at the back of the store; in fact, the general arrangement reminds a Londoner very forcibly of that of the toys and workboxes in the Lowther Arcade. Behind the stall is a room which serves as a store and office, and generally at the corner of the stall there is a square space some two feet above the ground, and perhaps three feet square, covered with a carpet, whereon the proprietor squats the livelong day, except when the muezzin of the neighbouring mosque calls him to prayer five times a day, when, having first performed his ablutions in the little back shop, he returns to his carpet to perform his devotions, which are accompanied by genuflections and prostrations enough to satisfy the most ardent Ritualist. In religious matters the Mussulman knows no shame, and he says his prayers before all the world and his wife with as little feeling of *mauvaise honte* as an Englishman has at saluting his friend on 'Change or in the street. The proprietor of the stall is generally a picturesque old fellow, who passes the entire day upon his carpet twiddling his beads, and now and then chattering with a customer, except when he runs out to smoke his hubble-bubble in a neighbouring café, for smoking is not allowed in the bazaar. One old fellow used to attract my attention as I passed through the bazaar. He was about 70 years of age, with an intelligent countenance, a broad, unwrinkled forehead, bright grey eyes, overshadowed by grizzled eyebrows, a slightly aquiline nose, a small grave mouth, and a full grizzled beard carefully trimmed. He wore blue cloth baggy breeches, a brown jacket and waistcoat trimmed with black braid, and a voluminous sash, striped with all the colours of the rainbow, into which was thrust his ink bottle and pen case, his tobacco pouch and cigarette tube, his account book and his Koran. On his head he wore a grey felt skull cap, around which was wound the green turban showing him to be a descendant of the Prophet, and entitling him to the appellation of "Eshret," or holy; spotless white cotton stockings and yellow leather slippers will complete his costume. His son, a handsome lad of 16, transacted all the business, as far as showing, wrapping up, and delivering the

goods went, the old man doing all the bargaining and receiving the money. Riza Pasha, who has held nearly every portfolio in the Turkish Cabinet, was just such another boy. He was the son of a druggist, and, being very handsome, attracted the attention of Sultan Mahmoud IV., who was passing through the bazaar. The Sultan made him his aide-de-camp on the spot, and he gradually rose from one post to another until he reached the Grand Vizierate.

In going through this bazaar, or indeed any other, one of the first things that strikes a European as curious is the utter absence of signboards, names, prices, or descriptions. Every one is supposed to know what he wants before he buys it, hence no descriptions are needed; and as for price, that depends entirely on the talent for bargaining possessed by the purchaser. It is true that there are generally a number of frames dangling about the stall, but they contain verses from the Koran, or prayers ingeniously worked into the form of boats, ships of the line, steamers or balloons, and have nothing whatever to do with the stock-in-trade. The guild of the drug sellers, who are all Mussulmans, is a very rich and powerful one, and closely resembles one of our city companies in its constitution. The bazaar is managed by a syndicate, and its property is inalienable. At night the great gates of the bazaar are closed, and nobody is allowed to sleep in it. It is delivered over at sunset to the care of a couple of watchmen, who patrol it during the whole night. The Turkish drug merchants have a great reverence for the celebrated sage Lokman, a learned negro physician and fabulist, who is supposed to be the original of our old school-friend Æsop. Galen and Hippocrates are also held in great veneration, but their great patron saint is Sounoun, a famous herbalist, who acted as physician to the Prophet Mahomet, and is said to have been one of the wisest men that ever lived.

It is now, however, high time to examine some of the products displayed, so, passing over sundry bags and baskets of blue stone, copperas, alum, brimstone, logwood, and other familiar substances, as not being worthy of notice, our eyes light on several heaps of yellowish green powder, with a horn or ivory spoon stuck in them for laddling the strange-looking commodity into the scale. This is the far-famed henna, or true alkanet, the term being a corruption of the Arabic *al hinneh*. True henna or alkanet is the powdered leaves of *Lawsonia alba*, a low, shrubby bush growing in Egypt and other hot dry climates, the false alkanet, which in Europe at least has long supplanted the real drug, being the root of *Anchusa tinctoria*. *Lawsonia alba*, or Egyptian privet, is by some botanists divided into two species, *L. inermis* and *L. spinosa*, while others hold that, although the leaves of the former are larger than those of the latter, they are both the same species, in spite of one bearing thorns and the other not. The plant was known to Dioscorides and Pliny, who mention the island of Cyprus as its habitat. It seems to have been used by the Egyptians from the earliest ages, henna blossoms having been identified in more than one Egyptian wall-painting. The best henna comes from Mecca, and is brought to Constantinople by returning pilgrims, who generally manage to pay the better part of their pilgrimage expenses by means of this and other "notions" which they pick up on the journey. In general appearance the henna plant closely resembles our English privet. It is propagated by cuttings planted in shady situations. It is a fast-growing shrub, and when the shoots reach the length of about three feet they are cut with a sickle and stripped of their leaves, which are dried in the sun, and finely powdered in a kind of rude hand-mill. In about two months or so, when a fresh set of shoots have reached the proper size, a second gathering is made, each plant yielding two or even three crops a year. If the plant is cultivated for the sake of the flowers, the shoots are allowed to grow to the length of five or six feet before they are cut. The fresh flowers, which give out a delicious odour, somewhat like that of orange blossom, have been sold in the streets of Alexandria and Cairo from time immemorial, and it is far from improbable that some henna sprays helped to conceal Cleopatra's "pretty worm of Nilus" from the eyes of her watchful attendants. Henna flowers are sold in large quantities in the markets of Cairo and Alexandria to the Egyptian and Coptic women, who prefer them to all others for weaving into their hair, under the impression that they act as an infallible preservative from headache. The freshly-gathered leaves are also much used for healing ulcers and sores, and as they contain a large amount of astringent matter they are possibly efficacious. Henna is largely used throughout Turkey, Egypt, Syria, Persia, and the East Indies as a substantive dye stuff. It is but slightly, if at all, soluble in cold water, but warm

water into which a little lime has been thrown readily dissolves out the colouring matter. The Turks and Arabs are very fond of dyeing the manes, tails, and hoofs of their white or grey horses of a fine mahogany brown with henna. They also use it for their own beards and hair, a fine natural black being afterwards obtained by a second dyeing with indigo. Its great use, however, is for dyeing the finger nails and insides of the palms of the hands of the women (a custom which is not so fashionable in the East as it was formerly). It is made into a paste with a little warm water and lime, and bound on the hand with a vine leaf or piece of rag. There is no difference in the Mecca and Egyptian varieties, except that the latter is adulterated with from 5 to 20 per cent. of sand and turmeric. Abdul Aziz Effendi, an Egyptian chemist, has investigated the properties of the colouring matter of henna. It contains a strong astringent principle, which he has named hennotannic acid. This is no doubt the reason that it is used as a remedy for hot hands by Eastern women. The fruit of the *Lawsonia* is said to act as an emmenagogue.

Close by we find a large fero basket full of a number of greyish round or oval discs and knobs. These are the dried roots of *Orchis mascula*, or some other of the 29 species of *Orchis* mentioned by Paul Chikhachev in his *magnum opus* on the Botany of Asia Minor, and when powdered forms the basis of *salep*, a warm drink closely resembling water arrowroot, largely consumed in the winter time by all classes of the community throughout the East. At one time *salep* was almost as common in the streets of London as it now is in those of Constantinople, and was called "saloop" or "shaloop," the last syllable having no doubt been lengthened for the convenience of the crier. The word *salep* is a contraction and corruption of the Arabic name of the *Orchis macula khassiyet-es-salap*, *testes vulpis*, being oddly enough the exact equivalent of one of the old English names cited by John Gerard, surgeon, in his "Herball." It is just possible that the name was brought home by the Crusaders or one of their leeches; but this by the way. The preparation of the root is very simple. As soon as the plant has done flowering the tubers are dug up, the plump ones being cut in slices in order to facilitate their drying. They are then dipped into boiling water for a moment and allowed to dry spontaneously in the sun. The dried root is pounded in a mortar, and a decoction made of the powder of about the thickness of ordinary water arrowroot. Sugar and powdered cinnamon or sweet spices are added to taste. The *salepjee* is looked on as the harbinger of the cold weather, and his plaintive cry is as sure a sign that the winter is coming as the tinkle of the muffin man's bell in England. Children, especially, are very fond of *salep*, and it is a pleasant sight on a cold winter's morning to see the little ones clustering round the *salepjee*, armed with their halfpence in one hand and their *simeets*—crisp rings of bread covered with sesame seeds—in the other. It is looked on as a sure cure for colds and hoarseness, and undoubtedly has emollient properties. Be this as it may, it forms a most comforting drink when going home from the opera or theatre on a cold winter's night, more especially if it is flavoured with a *souppon* of rum or cognac. It seems strange that it should have gone out so completely in England. Surely it would form a more palatable and comforting drink for late and early wayfarers than washy coffee. It was stated in Constantinople last year that a well-known *salepjee* had speedily made a small fortune by the discovery that ordinary starch, with the addition of a little extra sugar and spice, would make excellent *salep*, not to be distinguished from the real article by the oldest *salep* drinker, at about a third of the cost. Whether this was merely spiteful scandal or not it is impossible to say, but one thing the writer can vouch for, and that is that a certain European store in Stamboul supplies large quantities of Orlando Jones's patent rice starch to the *salepjees*, who, most assuredly, do not use it for their shirt collars or cuffs, seeing that they never indulge in these luxuries. Although starch makes a very good imitation of *salep*, there is but little true starch in the orchis root. In cold water powdered *salep* swells very slowly, but hot water converts it into a bulky, semi-transparent jelly. One part of *salep* will convert forty-eight parts of water into a thick gum. The mucilaginous matter which is contained in orchis root consists of a gum resembling bassoin.

Apropos of adulterations, if we step into the little back shop our worthy friend will introduce to our notice a number of long glass bottles, with gilt ornaments on them, the stoppers being tied down with bladder. These he will declare contain nothing but pure otto of roses, and are exactly the same as those

supplied to the Sultan's harem. If we were to test them we should find that the otto of roses used by the Sultan's favourites must be adulterated with at least a third of the so-called rusa or geranium oil, which has been long used for this purpose by the Stamboul otto of rose experters. Rusa oil, or oil of ginger-grass, as it ought to be called, is obtained from the *Andropogon Schrenanthus*, a plant growing in most parts of Hindostan. It found its way to Jedda by the hands of the Indian pilgrims, from whom it was bought and taken to Constantinople by their Turkish brethren, who, in turn, disposed of it to the otto of rose agents in Stamboul and Galata. The Franks are now the principal importers of ginger-grass oil. The adulteration is now carried on at the place of production in the Kizanlik district itself, the unsophisticated Kizanlikiotes having learned how to use it in a surprisingly brief space of time. It is, therefore, quite useless to try to procure true otto of roses in the bazaars, still less in the shops of the Christian quarters. The only method of procuring samples of the pure otto is to buy them wholesale of Messrs. Papazoglou Brothers, of Stamboul and Kizanlik, the largest otto of rose merchants in the world, or some other equally trustworthy firm.

Passing outside again from the scent-laden air, in which ambergris, sandal wood, oil of lemon, and musk-rat's tails are striving for mastery, our eye catches sight of a tray covered with dark-blue paper, upon which are heaped several piles of the glassy, semi-transparent tears of the *Pistacia lentiscus* or gum mastic tree. A beautiful Greek girl is chaffering with the attendant boy for a few drachms of the precious gum, which she will use as a masticatory. The habit of chewing gum mastic is common amongst all classes of women in the East, and I am assured by some of the first dentists in Constantinople that mastic chewers suffer comparatively little from toothache, and that their principal patients are amongst those who have not adopted the habit. Even the little children chew mastic, and a mother or sister will give her own special piece to a noisy young ten-year old to keep him or her quiet. It is very odd to a freshly arrived European, on paying a morning visit to some Greek or Armenian beauty, to see her take a large "quid" of what appears to be dentist's modelling wax out of her handsome mouth and deposit it by her side on the divan so that her flow of language may not be interfered with. If chewing the gum were the only use to which it was put it would be well for Turkey, but unfortunately a most pernicious liquor is made from it, which is drunk by all classes. It is called *raki* or *mastika* by the natives, and mastic by the Franks, and when pure is made by distilling a mixture of grape marc and gum mastic. The best mastic comes from Scio, and is little more than good wine spirit with a little of the gum and some aromatic flavouring oil in solution, but the ordinary quality, which is several degrees above proof, is sold at about a quarter the price of gin, and is made from speilt Boston rum, which is imported for the purpose in enormous quantities. Of course it contains fusel oil, pelargonic, and half-a-dozen others, and a certain amount of gum mastic, and forms a mixture compared with which the lowest quality of gin to be found in Whitechapel is a wholesome beverage; in fact, it closely resembles the whisky the drinking of which, according to a certain Irish member, gave you the sensation of swallowing a torchlight procession. Gum mastic is the "pig in the parlour" of the Scioters, for it pays the tribute exacted by the Sultan in return for his allowing "Scio's rocky isle" to maintain a quasi-independence. The *Pistacia lentiscus* has hitherto been confined to Scio, but Professor Orphanidis, of the Athens University, and one of the foremost naturalists of Greece, in a recent work on the subject, enumerates several other spots amongst the islands of the Archipelago where it might be grown with advantage. Mastic gathering is a simple process. About the beginning of June incisions are made in the bark of the tree, and the gum almost immediately begins to flow. It becomes hard in about a fortnight or three weeks, and is collected by women and children, cloths being laid on the ground to prevent waste. An ordinary tree will yield from 8 to 10 lbs in a moderately favourable year. The finest quality of the gum, i.e., the whitest and most transparent, is obtained from the smaller branches, which of course only yield small quantities.

As we pass on to the next object of interest a haggard looking man, with large staring eyes and hurried manner, steps up to the boy attendant and puts a coin into his hand: with an anxious nod of intelligence, the boy steps into the back shop and returns with a little paper parcel, which he furtively slips

into the customer's hand, who smiles his thanks and glides off. The parcel contained a few drachms of hashish, or *esrar*, as it is called in Turkey. Its use and sale are forbidden by Turkish law, but *esrar* eating still goes on in Stamboul to an enormous extent, both in public and in private. Only last year the son of an influential pasha was caught in a sly hashish-eating den and heavily fined, and just about the same time another highly-placed victim to this vice walked out of the first-floor window, the lightsome feeling induced by the drug having led him to suppose that he had suddenly become possessed of wings. Luckily he fell into a small thicket of laurels, and escaped with a broken leg and a firm mistrust of his flying powers. Our friend in the green turban is not particular, and would, no doubt, let you have

such soon-speeding gear
As will disperse itself through all the veins,
That the life-weary taker may fall dead;

and that, too, for much less than the forty ducats with which Romeo tempted the Mantua apothecary. Such "caitiff wretches," however, are fast disappearing before the new pharmacy laws, which are most excellent in their way, and only want rigidly enforcing to put all such scandals out of sight.

On a shelf about as high as our heads are a series of old Italian specie jars labelled "*Mostarda N. moscado, Garofano*," &c., which must have belonged to a contemporary of our Mantua friend. The *Mostarda* jar contains *rusma*, a depilatory made of orpiment and lime, which is much used by the Turks, for they are bound by their religion to wear no hair on any other part of the body whatever than the head, or, in the case of the male portion of the community, the chin. The operation is performed when they go to the public bath, which is always once a week, and generally oftener. Its neighbour is full of *surmeh* or *keahl*, which is simply crude antimony sulphide finely powdered and mixed with a little charcoal. It is used by native women for increasing the intensity of the black line under the eyes where it is absent or too faint. To the European it gives to even the most beautiful eye a fixed and unnatural look. It is applied by shutting the eye, dipping the head of a pin in the mixture, and drawing beneath the under eyelash. The more economical beauties, however, use a half-burnt lucifer match, which is just as effective and much cheaper. The third brings us nearer home, for it contains magenta powder, which is used in large quantities by the Bulgarian shepherds for raddling their sheep, and by the Constantinople native "fancy" for decorating their fighting rams.

Between a couple of glass jars, one containing leeches, the other frogs, which are much used by the natives as a cure for headaches, is a tray containing a pile of olive sticks about ten inches long and half an inch in diameter. At one end, for about half an inch, they are split in all directions, so as to form a brush closely resembling a stencilling brush. This is the true Turkish tooth-brush, and a Turk will use it as quickly and dexterously as the "heathen Chinese" does his chopsticks. As a strict Turk is obliged not only to wash his head, face, neck, ears, and feet, but also his teeth, at each of the five daily calls to prayer, he very soon wears out his tooth-brush, so these articles are generally sold in packets of a dozen. The less particular Turks use ordinary European tooth-brushes, but as even the most lax amongst them look on the pig and all belonging to him as vile and unclean, they would as soon think of defiling their mouths with a Russian bristle-tooth brush as of eating a pork chop or a rasher of bacon. The shopkeeper, therefore, swears by his head and the souls of his father and mother that the hair of which his tooth-brushes are made grew on the back of the camel, the cow, or the horse. I once suggested to an English merchant that he should try and induce some English brush maker to manufacture brushes of all kinds of some vegetable fibre, especially for Turkish use, but he was uncharitable enough to reply that he was sure that not one of the shopkeepers of Pera, Galata, or Stamboul would consent to sell them, for it would partially deprive them of one of their most favourite enjoyments—lying.

Passing out of the bazaar, we find that the sun has already set, and that a sound is echoing through the upper air as if the whole city had suddenly taken to crying "Sprats" or "Walnuts." This is what enthusiastic tourists call the "plaintive and poetical cry of the muezzin," which, while calling the faithful to prayer, warns us that we are a good half-hour's journey from our favourite restaurant, and that if we do not make haste all the best dishes will have been devoured by the modern *Graculi* of the hilly suburb of Pera, who as fully deserve the epithet "*esurientes*" as their ancestors of the days of Martial.

A FEW NOTES ON VANILLA.

By P. L. SIMMONDS.

ONE of the most profitable and least troublesome cultures of humid tropical climates is certainly that of the vanilla orchid, of which there are several species, as the true vanilla (*V. saliva*, Scheed), the wild or simarona (*V. sylvestris*), and the pompona (*V. pompona*). It is grown from Mexico to Peru, on the American continent, has been introduced into several of the West India Islands, and is extensively cultivated in Reunion and Mauritius. The pods or fruit vary greatly in length. Those of Brazil are in general much larger than those grown in Mexico, and in France the pompona pods are known as "vanillons." Those of the province of Sergipe are 8 or 10 inches long by 6 to 12 lines broad. Those of Minas are 6 to 9 inches long by 4 to 6 lines broad.

Vanilla in Brazil is very badly prepared; in fact, no attention is given to the culture, but the pods are merely collected in the woods as they ripen. It is considered in that country to have medicinal properties, and is much employed by the Spaniards and Portuguese to cure various maladies: being reckoned stimulant and stomachic, it is added to chocolate to make it more digestive. It is largely used in confectionery and perfumery. A kind of liqueur and a syrup are also prepared with it in Brazil.

In the "Medical Flora" it is stated that "vanilla exercises a powerful action on the animal economy, and justifies the attributes of tonic, stimulant, and comforting, which are accorded to it. The truly active and strong impression which it makes on the nervous system by its fragrant aroma, and on the stomach when taken internally, is rapidly and sympathetically transmitted to all the organs, the functions of which it more or less accelerates. Hence, when the system is lowered, vanilla facilitates digestion and nutrition, augments the cutaneous transpiration or the secretion of urine, and acts as a tonic in various other ways. It is recommended in cases of dyspepsia, melancholy, hypochondria, and chlorosis, where the digestive functions are sluggish or torpid."

In Guatemala the Indians of Vera Paz collect a good deal of vanilla growing wild in the woods along the banks of the river Polochic and in the forests to the north-west of Coban, and this orchid is also found growing on the coast of Suchitepequez.

In 1871 the number of hectares under culture with vanilla in Reunion was 593, and the produce 56,203 lbs., of the approximate value of 153,282*l.*, raised at a cost of little more than 5,100*l.*

The production in this island is shown by the following figures:—

			Hectares		Produce Kilos.
1866 ..	..	..	223	..	15,494
1867 ..	..	..	218	..	16,162
1868 ..	..	..	230	..	15,041
1869 ..	..	..	303	..	19,063
1870 ..	..	..	334	..	18,512
1871 ..	..	..	593	..	25,547

The hectare is nearly 2½ English acres, and the kilo. a little more than 2 lbs. avoirdupois.

The British consul at Reunion, in his report dated May 1, 1875, states "The great demand for this perfume latterly in the markets of Europe has brought large profits to the planters of it, and the plantations have multiplied on all sides to such a degree that the next crop will double that exported this year, which amounted to 20,854 kilos., and the quantity which will appear in the market towards the month of August next is calculated at about 40,000 kilos. Unless circumstances arise which are at present unforeseen, and also by reason of the newness of some of the plantations, the colony can produce in two or three years from 50,000 to 60,000 kilos. of vanilla. I learn that this cultivation is also extensively carried on in Madagascar and Mauritius, and it is feared by persons interested that this extended cultivation will create a supply too great for the demand, or, in other words that prices will go down."

Vanilla is cultivated more particularly by the small proprietors than by the great. Its produce assists a part of the population who are averse to work and the small extent of whose lands has not allowed them hitherto to think of attempting a cultivation like that of the sugar cane, maize, manioc, or coffee, which would require the assistance of labourers or field-hands. Provided the soil be fertile, moist, and shaded, it needs but a small space to accommodate thou-

sands of vanilla plants, and this produce, being of considerable value, yields to the cultivator a profit which no other plant on the island can give. The crop of Reunion in 1864 sold at an average of 50s. the pound, therefore a sum of 104,000*l.* was circulated, principally among the small planters and coloured population. It would be rash to expect such prices in future, but even admitting a reduction to 30s. the pound, it would still be advantageous to continue this cultivation.

For exportation in good condition vanilla should be packed in tins well soldered, in quantities of about 10 pounds.

In December, 1868, when the market was glutted, vanilla realised but 6s. a pound: subsequently it went up at a bound. It was 15s. per lb. in March, 1869; 28s. per lb. in August, 1871; 45s. in August, 1873; 57s. to 60s. in 1875; and now it is quoted 20s. to 40s.

Besides the large consumption of vanilla as a flavouring essence, it is also used to a small extent in scenting tobacco, snuff, and cigars, and as a perfume; and more recently a new demand for vanilla has arisen, especially in Germany, the ped having been found to yield a fine brown colour.

Vanilla flourishes in Bangalore and Calcutta, and thrives in Ootacamund, where the cold is even more intense.

A few hundred pounds of vanilla are raised in Guadeloupe. In 1869 260 kilos were gathered there, and in 1871 149 kilos were shipped to France.

It was from Reunion that the vanilla orchid was carried to Mauritius. We have not the returns of the exports for the last few years, but the shipments from that island for the five years ending 1871, with the declared values, were as follows:—

	lbs.	£
1867	—	1,488
1868	4,014	966
1869	5,351	2,004
1870	4,986	2,860
1871	4,920	3,345

Among the vegetable odours assimilating somewhat to vanilla are the Faham leaves, of Mauritius, from another orchid, *Angræcum fragrans*, which somewhat resembles the perfume of vanilla and Tonquin beans. The leaves of some other orchids, such as *Orchis fusca*, dried carefully, also possess the odour of those of the Faham.

Siam benzoin, especially that in tears, and the balsams of Tolu and Peru, have a pleasant perfume, like vanilla. That of the Tonquin bean (*Coumarouna odorata*), long used in perfumery, and the dried flowers of the melilots, especially the blue melilot, have also a pleasant odour. Of Tonquin beans 20,770 lbs. were shipped in 1874 from the single port of Ciudad Belivar, in Venezuela, to New York.

The advance in price of vanilla gave a great impetus to the culture, and many small proprietors who embarked in it made large profits, but the extension of culture has not reached the limits which were expected. Owing to the alarm created by the reports of the artificial production of vanilline from the cambium sap of pines a panic arose among the growers, and less attention was given to the culture.

Subjected to the action of a ferment, emulsion for instance, coniferine divides into glucose and a compound crystallised in beautiful prisms which melt at 73°. The latter substance is readily soluble in ether, less soluble in alcohol, almost insoluble in water. Under the influence of oxidising agents the product of fermentation undergoes a most remarkable metamorphosis. By treating it with a mixture of potassium bichromate and sulphuric acid, ethylic aldehyde is first formed, then an acid substance, soluble in water, which can be removed by agitation with ether. By evaporating the other starlike groups of crystals are obtained, which melt at 81°. These crystals have the savour and odour of vanilla. On comparative examination it was found that they were identical with the aromatic principle of vanilla, and which is frequently observed on vanilla pods in the form of delicate needle-shaped crystals. According to analysis the body obtained by oxidation contains $C_8H_8O_3$, exactly the composition which the recent researches of M. Carlis attribute to the aromatic principle of vanilla. Artificial vanillin is now prepared on a large scale in Germany from the cambium sap of pines. It is not made pure, but sold in the form of an extract, or rather an alcoholic tincture, which contains 2 per cent.—the average amount found in vanilla. The odour of pure undiluted vanillin is not entirely identical with that of vanilla; but in its diluted state, and particularly when used as a flavour, its odour is not distinguishable from vanilla. The price of the alcoholic solution will be about two-thirds that of vanilla.

At the Philadelphia Exhibition Dr. William Haarmann, of

Holzminden, on the Weser, showed this new artificial vanillin of his discovery; also a glass of coniferine, the glucoside contained in the cambium of coniferous woods from which vanillin is made. The latter is identical in composition, melting point, flavour, and all other properties with vanillic acid from the vanilla bean. Vanillic acid (a by-product), vanillic sugar, vanillic alcohol, and vanillic glycerine were also shown. These works were established in 1875, and employ in the summer months about 46 workmen.

More recently Dr. K. Reimer has found not only a new source of it but an equally novel and simple method of preparation. This is the creosote of wood-tar from the beech-tree. The resemblance of creosote and carboic acid is so close that for a long time there was no certain method of distinguishing them, and one was frequently sold for the other. When carboic acid is mixed with chloroform and an excess of caustic soda, and after the reaction is over the chloroform is distilled off, a substance remains which contains salicylic acid. By decomposing with acid an oily salicylic aldehyde remains, that can be purified by combination with bisulphite of soda and again decomposing with dilute acid. In this way an artificial winter-green oil is obtained. Guaiacol, a constituent of beech-wood tar creosote, if treated in this way, yields the aldehyde of vanillic acid or vanilline. S. Marasse, who discovered guaiacol in creosote in 1870 (*Ann. Chem. Pharm.*, ciii. 59), stated in his essay that it had a pleasant odour like vanilla, an odour also peculiar to guaiacum wood (Pockholz) and its resin, gum guaiacum, from which guaiacol was first made by Unverdorben in 1826.

It is probable that the numerous phenols will enable us to prepare other natural flavours artificially; at all events it opens an attractive field for research.

In the *Moniteur Scientifique* of Dr. Queseneville for October there are two elaborate and interesting articles "On the Combinations of Coniferine and Vanilline" and "On certain Derivatives of Vanillic Acid," by F. Tieman.

Scientific Notes from Foreign Sources.

THE ESTIMATION OF FAT IN MILK.*

By N. GERBER.

For the estimation of fat in milk various forms of apparatus have been recommended, which have proved more or less complicated or unpractical. In order to effect this troublesome estimation, the author has devised an apparatus the details of which will be easily understood from a description of the method of analysis.

Ten or twenty cubic centimetres or grammes of milk are diluted with twenty to thirty volumes of distilled water, and placed in a sufficiently capacious beaker. Very dilute acetic acid is now added drop by drop, with constant stirring, until small flocks begin to form in the milk. The beaker containing the fluid is next placed in warm water (75° C.) and allowed to remain until the casein has separated from the serum in large flocks, when it is thrown upon a filter, and dried at 110° C. The serum is afterwards not merely boiled, as is generally directed, but, for the complete separation of the albuminates still present in the liquid, is evaporated to one-fourth of its volume. The albuminates so obtained are received on the filter containing the casein, and the whole coagulum is washed with cold distilled water till the wash water no longer has an acid reaction. The filtrates may be used for the estimation of the sugar. In order to obtain uniform results as to the proportion of milk albuminates (casein and albumen) the author recommends that the casein and albumen be always estimated together, and not separately, because the quantity of the latter is dependent on several circumstances. If a larger or smaller proportion of acid is taken for the coagulation of the milk, or if the serum, according to the usual method, is boiled for a longer or shorter period, a larger or smaller proportion of the so-called albuminates (which the author views as differing only in solubility) is obtained. The consequence of this is that one and the same specimen of milk in the hands of different chemists gives results varying with the method employed, a consummation to be strenuously avoided, especially in legal cases.

The milk albuminates obtained as above are now, with the

* *Bes. des Deutsch. Chem. Gesell.*, May 22, 1876, p. 656.

filter, placed in a funnel-shaped vessel, which is then applied to an air-dried and tared flask. The coagulum is first washed with alcohol, and to the latter, when it has passed into the small flask, three-fourths of its volume of ether is added: a Liebig's condenser is now attached vertically to the funnel-shaped vessel, and the arrangement is placed on the water-bath. If the ether is allowed to do more than gently simmer there is danger of it condensing so rapidly into the filter as to run over the edge, and so carry particles of coagulum into the flask. By this arrangement a limited volume of ether is made to do considerable work: it distils over and over again into the filter, and rapidly removes the fat. When this object is attained a drop of ether from the filter received on bibulous paper leaves no stain. The funnel-shaped vessel is then removed and the condenser is attached to the small flask by a bent tube, and the ether and alcohol distilled away from the fat, which is dried first on the water-bath and finally on the air-bath at 105° to 110° C.

This method of fat estimation is simple and practical, and avoids the troublesome warming and pouring of ether on the coagulum, besides that it is much more economical of ether.

KAVA-KAVA.*

ACCORDING to the *Gaz. Médic. de Paris* the root of kava-kava (*Piper methysticum*) in the form of infusion has long been used in the islands of the Pacific Ocean as an agreeable popular remedy for gonorrhœa. Four to six grammes or more of the incised root are macerated for five minutes in half a litre of water, with frequent agitation. The infusion is filtered and given in two doses daily, before and after meals, until a cure is effected. Twenty minutes after the first dose the patient experiences a pressing desire to urinate. The urine passed is large in quantity and of a clear watery appearance. The smarting which is experienced at first in the discharge is removed, and a feeling of comfort supervenes: a cure is effected in from 10 to 12 days. In addition to this the kava acts as a bitter tonic, is agreeable to take, promotes the appetite, does not incommode the digestive organs, and finally occasions neither diarrhœa nor costiveness.

CHEMICAL AND PHYSIOLOGICAL RESEARCHES ON MANCONA BARK.

BY N. GALLOIS AND E. HARDY.†

Erythrophleum Guineense (*Leguminosæ*), or red-water tree, was found by Don at Sierra Leone, then at Albreda by Messrs. Leprieur & Perrotet. It is a tall tree, of which the wood is very hard and incorruptible, and valuable for carpentry and domestic purposes. The bark is used by the natives for poisoning arrows, and to prepare ordcal liquors for criminals. It is presented in the form of flat, irregular pieces of a reddish-brown colour and unequal surface; is hard, fibrous, and inodorous, and the dust causes violent sneezing. A specimen was given to the authors by M. Aubry-Lecomte, curator of the Colonial Museum, and they have obtained an alkaloid from it. The process adopted by them was as follows:—The powdered bark was macerated for three days in alcohol of 90°, cold and slightly acidified with hydrochloric acid; strained, expressed, and filtered. This operation was repeated twice or thrice on the marc, to the complete exhaustion of the bark. From the united tinctures the alcohol was recovered on a water-bath; the residue, being evaporated at a low temperature, yielded a red-brown resinous extract, which was treated five or six times with tepid distilled water, until nothing more was taken up. The aqueous liquids were united, concentrated by evaporation, and when cool decanted into a test glass; ammonia was now added to saturation, and the whole agitated with four or five times its volume of neutral acetic ether. The acetic ether was run off through a stoppered funnel, filtered, evaporated on the water-bath at a low temperature, and the yellowish residue exhausted with cold distilled water. This aqueous solution was filtered and left to evaporate *in vacuo*.

A second process is Sta's method, with the precaution that ether is replaced by neutral acetic ether.

By the usual tests the residue obtained as above was recognised as an alkaloid, which is called by the discoverers *Erythrophlein*. It is without colour, crystalline, soluble in water, alcohol, fusel oil, and acetic ether. It is scarcely soluble in

sulphuric ether, chloroform, or benzine. It combines with acids to form salts. With permanganate of potassium and sulphuric acid erythrophlein strikes a violet colour, less intense than that furnished by strychnia under the same conditions, and fading to a dirty tint.

The possibility that erythrophlein might be a product from a natural glucoside, and not an alkaloid already existing in the drug, was shown not to have place, by tests applied directly to the infusion, and by actual separation of erythrophlein without the intervention of an acid.

Physiological experiments made by the authors on dogs and frogs show that erythrophlein possesses strong toxic properties, and indicate that it is a cardiac poison. Whilst curare retards the effects of mancona poison, atropine does not restore the movements of the heart paralysed by it.

Erythrophleum coumenga or *koumanga* is also a considerable tree of the same genus. All its parts are poisonous, and in the way indicated above the authors have separated an alkaloid which is closely related to erythrophlein, if not identical with it.

HYDROBROMATE OF QUINIA FOR HYPODERMIC INJECTION.*

BY W. S. THOMPSON.

In view of the insufficient solubility of "bromide of quinia" to prepare a concentrated solution for hypodermic use, the author recommends the following formula, which has been used with satisfactory results:—

Quinia sulphate, 96 grains
Distilled water,
Diluted sulphuric acid,
Water of ammonia, and
Hydrobromic acid, of each a sufficient quantity.

Dissolve the quinia sulphate in four fluid ounces of distilled water, with sufficient diluted sulphuric acid. Mix 150 minims of water of ammonia with 4 fluid ounces of distilled water, add to the solution of quinia, constantly stirring, and transfer the whole to a muslin filter. The solution of ammonium sulphate which passes through the filter should be tested, and if the presence of quinia be detected add a little more water of ammonia to the whole of the solution and return it to the filter.

After the quinia is drained, wash it with distilled water; transfer the moist magma to a tared capsule, and add gradually just sufficient hydrobromic acid to dissolve it. Evaporate the solution thus obtained on a water-bath until it is reduced to a transparent mass: the weight of the quinia hydrobromate is thus ascertained, while, at the same time, any excess of hydrobromic acid is driven off.

Lastly, dissolve the mass in a sufficient quantity of distilled water, so that each fluid drachm shall contain twelve grains. The resulting solution will measure about one fluid ounce.

THE PROPERTIES OF XANTHIUM SPINOSUM AND ITS USE IN HYDROPHOBIA.

The following is abstracted from a letter sent by Dr. Grzymala, of Kaivoc-Ozero, Podolia, to Professor Gubler, editor of the *Journal de Thérapeutique*:—"Opposed to specifics, both in medicine and therapeutics, I have faith only in physiological action, although, as regards many substances, this is very little known. I am convinced that the physiological action of a diaphoretic, *xanthium spinosum*, should furnish the explanation of its effects against hydrophobia, for it is of the treatment of this dreadful malady that I wish to speak. This plant infallibly neutralises the effects of the *rabies virus*, if the single condition be observed that it is administered at once, that is, before the disease declares itself. I have used *xanthium* for several years with the best success, and have not met with a single case of failure, although I have had occasion to administer it at least ten times as often to men as to animals bitten by rabid dogs and wolves. In this country rabies is very common, and for more than twenty years that I have employed this remedy an average of ten cases per annum justifies the proportion mentioned.

"*Xanthium* is sudorific, sialogogue, and feebly diuretic, less pronounced in its action than *jaborandi*. All the physiological effects are not produced on the same subject: some perspire, others are

* *Pharm. Zeitung*, June 28, 1876, p. 439.

† *Journ. de Pharm. et de Chim.*, July, 1876, p. 25.

* *Amer. Journ. Pharm.*, July, 1876, p. 293.

salivated, and others pass more than the normal quantity of urine. The temperature is slightly elevated, and the circulation is usually accelerated. Sometimes it produces headache, or nausea, and even vomiting. In general the appetite is augmented, and the digestive functions are not deranged. The dose for an adult is 60 centigrammes of the dry powdered leaves, repeated three times a day, and continued for three weeks. Children below twelve require half this quantity. It is unnecessary to say that I never cauterise. About twelve years ago one of my dogs, becoming rabid, bit a cow, a pig, a dog, a cat, and a tame crane. The first three were treated with *xanthium* for twenty-one days, and were not further affected; the crane and the cat were left to themselves and died of hydrophobia, the one at the end of three and the other at the end of eleven days after being bitten. During the Crimean war a family of twelve persons were bitten by a rabid wolf. Six of these persons entered the hospital of Olschanka. All were cured, whilst the remaining six, treated by the *actual cautery* and the daily administration of *cantharides*, with *tonquin bean* and *genista tinctoria*, died raging in the course of twelve to sixty days. Two years ago six hounds in my possession were bitten by a rabid dog (this animal succumbed at the end of two days, with all the symptoms of hydrophobia). Three of the bitten hounds were isolated and left without treatment; they died at the end of fifteen days, with all the signs of rabies. Three others, left at liberty but placed under treatment for three weeks (thirty grains per day in three doses), I still have with me, and they have never been unwell. I feared to have failed with one of them, for he disappeared the twelfth or thirteenth day of the treatment. He was recovered three months afterwards, his disappearance showing that twelve days' treatment sufficed."

Dr. Grzymala adduces other instances of the favourable action of *xanthium* in hydrophobia, equally striking with those given, and concludes as follows:—"These are real and positive facts, which I am able to substantiate. I have not drawn on the imagination for them; they are personal to me, and, I repeat, I have more than a hundred others, which I am prepared to submit to you if desired. I forward them in the hope that they may be inserted in your very estimable *Journal de Thérapeutique*. I am certain that the experiments you may make with the leaves sent, on their physiological and therapeutic action, will correspond to those described, and I shall thus have co-operated, although feebly, in that path of therapeutics which you and your distinguished collaborators have so splendidly opened."

A NEW ALKALOID.*

M. TAURET, a pharmacist of Troyes, has addressed a note to the Society of Pharmacy of Paris on a new alkaloid separated from the leaves of the walnut tree, *juglandine*. M. Tauret exhausts the dried walnut leaves by means of alcohol, precipitates with ammoniacal solution of acetate of lead, acidulates and distils. To the residue ammonia is added in excess, then chloroform, and the mixture agitated. After purification the alkaloid is obtained in long acicular crystals, which blacken and alter rapidly on exposure to the air. The discoverer hopes to obtain a large yield of *juglandine* by operating on fresh walnut leaves.

PEPTON.†

DR. SAUDER, an apotheker in Amsterdam, has introduced a preparation which he calls pepton. The term is generally used to indicate the product of the action of the gastric juice on albumen or protein matters, that is, of pepsin on muscular tissue. The preparation here spoken of is prepared by the artificial digestion of good flesh by means of pancreas, and is in a concentrated form, so that one part represents about three parts of flesh. Pepton forms in thin layers a clear, in thicker layers a slightly turbid, fluid of a thin syrupy consistence. It is somewhat bitter in taste, resembling extract of meat, and the smell is very like that of a mixture of flesh extract and mushrooms. Pepton is supplied in hermetically closed cylindrical tins, holding 250 c.c. (9 fluid ounces). One of these sells for 3 marks (shillings).

* *Repert. de Pharm.*, June, 1876, p. 373.

† *Pharm. Zeitung*, June 24, 1876, p. 431.

ON MUSTARD PAPER.*

By E. DIETERICH.

THERE are now few pharmacies in which mustard paper does not form part of the stock, and many physicians prescribe the use of it. Being official it is matter of astonishment that during the compilation of the *Pharmacopœia* the claims which might reasonably have been advanced in favour of a well-made article were not put forward. Having noted down numerous observations made during the preparation of mustard paper, I propose to fill the hiatus.

A good mustard paper can only be made from a mustard flour which has been so thoroughly freed from the fat oil that not even a trace remains. In the other case the article is less active, the mustard clings only lightly to the paper, and on being applied easily fixes itself to the skin, and, lastly, such a paper loses its activity altogether by keeping, because of the development of rancidity in the fat oil. On the part of the manufacturer the use of too high a temperature during the pressing or drying of the mustard meal would also cause failure. This may be determined by observing whether a small sample when moistened develops the odour of mustard oil. Whether, on the other hand, the mustard has been completely deprived of fixed oil, and therefore the paper prepared from it will retain its activity on lying by, is best ascertained by macerating some of the paper for an hour in petroleum benzine, and then filtering into a test tube. If the column of liquid, on looking down through it vertically, is without colour, the removal of the oil is complete, but if golden yellow, the mustard or mustard paper is to be avoided. I must here mention that the fixed oil of mustard colours intensely yellow any solvent of it, and this characteristic is used as a test to determine the extent to which it has been removed from the meal. A paper prepared with meal not thoroughly free from oil shows this yellow colour: a good paper should give a whitish-grey colour. The action of the latter should also commence in forty seconds (at most in sixty seconds) from the time it is applied.

CHEMISTS' TRADE ASSOCIATION.

MEETING IN ABERDEEN.

A MEETING of the chemists of Aberdeen, called by circular, was held in the room of the society on Wednesday, September 20, 1876, at which Mr. A. Strachan was, with the approval of the executive, elected local secretary. It was considered desirable that the local secretary should be empowered by the executive to request, by means of printed circulars, the chemists in the adjoining counties of Banff and Kincardine to co-operate with them in this movement.

A letter was read from Mr. Miller, Turriff, suggesting that an energetic party should be paid to canvass the rural districts, and provided this were done he would be quite willing to give a donation of 1*l*. A deputation of four, viz., Messrs. Coutts, Cruickshank, Mortimer and Strachan, were appointed to canvass the town with as much expedition as possible, so that their report might be presented to the executive before the discussion on the Glasgow memorial.

This has been done, and they report very favourably having received only two decided refusals out of a possible of thirty-one.

In the meantime the members withhold their donations until they see the good work proceeding. The subscriptions are given conditionally—

1. That this association leave no stone unturned to procure an amendment of the Pharmacy Act.
2. That an executive be appointed with head-quarters in Scotland as per Glasgow memorial, having Scotch solicitors to conduct Scotch prosecutions and defences.
3. That they give their attention to cases handed them through the local secretaries, and prosecute when necessary, collecting further information at the expense of the association.

In the meantime and until satisfactory answers to the above be received, the amount collected will be placed in the George Street branch of the North of Scotland Bank on deposit receipt.

* *Pharm. Post*, August 16, 1876, p. 266, from *Apoth. Zeitung*.



For particulars of Advertisements, Subscriptions, &c., please refer to the first page of Literary matter. An Index to the Advertisements contained in this issue will be found in the front portion of the Journal.

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BEING a first-class article, and nicely got up, commands a good sale by all Chemists who bring it under the notice of their customers.

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Entirely removes Lead from Water, thus meeting the complaints that arise from time to time as to the presence of Lead in Aërated Waters.

For confirmation of this assertion, see the opinions of such authorities as Dr. BARTLETT, Professor WANKLYN, and others, at page 74 in this Journal.

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In consequence of Spurious Imitations of LEA & PERRINS' SAUCE, which are calculated to deceive the Public, LEA & PERRINS have adopted a NEW LABEL, bearing their Signature, thus—

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Which will be placed on every bottle of WORCESTERSHIRE SAUCE after this date, and without which none is genuine. Sold Wholesale by the Proprietors, Worcester; Crosse & Blackwell, London; and Export Oilmen generally. Retail, by dealers in Sauces throughout the World.

November, 1874.

REDUCTION IN PRICES.

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LONDON.

Editorial Note

COUNTER PRESCRIBING.

THERE are rumours abroad that the Medical Defence Association has at last resolved to try its strength in a conflict with the chemists and druggists. Since the now famous judgment of Baron Bramwell, and his interpretation of the Apothecaries' Act in the "Nottingham" trial, the association has been hugging to its bosom its new weapon with most affectionate embraces. We cannot wonder at their doing so. The new toy was a very attractive one, and, by cleverly displaying it, it has no doubt brought in a large contingent of country members. The leaders of the association, we have reason to believe, would be very well contented to preserve their glittering trophy in a glass case for the rest of their existence, for they know well enough that it is by no means suited for real action. Indeed, Baron Bramwell himself told them as good as this when he remarked that "it would be very unreasonable" to take proceedings in such a case as the one he had suggested as an infringement of the letter of the law. Unfortunately, however, the country doctors are not Baron Bramwells; they are firmly convinced that diseases are a providential arrangement to supply nourishment to themselves and their families, and to them, therefore, the newly discovered interpretation of the law coincides with the eternal principles of justice. It is these useful gentlemen who have been forcing on the Medical Defence Association, and who, if they can, will before long upset the whole concern in their eagerness to clear the track of all intruders.

Up to the present we have not heard of any actual proceedings being commenced. If the first case attempted should turn out to be a simple instance of what is fairly described as counter prescribing there will be no difficulty about the defence. Two powerful organisations are willing to conduct it, and the Medical Defence Association may rest assured that the trade is quite prepared to carry the contest even to Parliament, if need be.

The medical profession is well aware of how much sympathy it can count on in the House of Commons in the prosecution of its selfish objects.

IS THE TRADE WORTH DEFENDING?

It needed the combined and accumulated sagacity of the Pharmaceutical Council to find sufficient material for a two hours' discussion practically on this question. Here is a chemist and druggist picked out as a representative victim by that section of the medical body which desires to "bestride our narrow world like a Colossus," and only a bare majority among seventeen of our administrative deputies can be brought to vote that under certain possible circumstances it might be advisable for the Council of the Pharmaceutical Society to lend its influence in aid of the defence of a right which is essentially and morally ours, not only as chemists and druggists, but even as human beings. Of all the extraordinary discussions which have ever taken place in the Pharmaceutical Council, we remember none to equal this. The case submitted, we believe, was this. A chemist at Nottingham, a member of the Society, was asked by a customer to give him some medicine for a cold in the head. He did so, and charged him for it. For this crime he is to be prosecuted. Shall the Pharmaceutical Council, the guardians of the interests of the trade, defend such a case? It is then necessary to ask the question. Yes; and it is necessary to look up the charter of the society, which we are not quite sure about, and search in the records of our history for precedents, and be careful how we show disrespect to the gentlemen who are attacking us. Why this subject is the very Eastern Question of our trade, without the complications of the political one. If the doctors really mean fighting, the alternative for chemists is either to be eaten up piecemeal or to join hand in hand and resist—first by all legal means, and if these fail, why, then, to try Gunpowder Plot or emigration *en masse*. They say in effect—Anybody in this free country, *except you chemists and druggists*, may express an opinion about a cold in the head; you, and you alone, may not do so, because colds in the head have been especially provided by Providence for *our* emolument. This, in plain words, is their monstrous theory which, seriously, they are trying to establish; and, curiously enough, the law seems to be on their side. It may prove necessary to get the law altered. That is a labour which a private individual ought not to be asked to do for the benefit of the body. Is it, then, an occasion for a little enthusiasm, or for a study of precedents?

It will not do for the Council to say this time that they cannot be expected to spend money for the good of the whole trade. The President of the Trade Association came up to London to consult with them on the subject, and they declined to co-operate.

Mr. Schacht was the chief opponent of any action on the part of the council. Now we have never done sufficient justice to this gentleman's patient, earnest, generous efforts on behalf of education. But we recognise these, and we ask Mr. Schacht on what ground of logic or justice would he spend the society's money in assisting young men to come into the trade, and yet would refuse to spend any to defend a right which we cannot but think he would claim, even if he does not exercise it?

The Medical Defence Association must not judge of the trade from the Pharmaceutical Council. Nothing could have been planned that would so quickly bring the trade into union like an attack of this sort. Whether the Council helps or hinders, the battle will be fought, and the Medical Defence Association had better count over its pocket-money, for it has a long and arduous struggle before it, if it means to keep up the contest so long as we will.

ENGLISH WEIGHTS AND MEASURES.

In connection with the Exhibition of Scientific Instruments an interesting lecture on the history of our standard weights and measures was delivered at South Kensington on August 29, by Mr. Chisholm, the official warden of the standards. The chief duty of that officer seems to be to keep the keys of the Pyx Chapel in Westminster Abbey, where the standards are kept, and to look at these occasionally to see that they are neither waxing nor waning in size or gravity. It appears to have been an old English custom to keep the standards in a consecrated chapel, just as the ancient Greeks and Egyptians kept theirs in their temples. We resist the temptation to moralise on this curious point. The yard, which is the old Saxon *gird*, has not varied much in its long career. It is now 0.01 inch longer than it was in the days of King Edgar. Henry VIII. seems to have lengthened it a trifle, but Elizabeth got it right again. The pound has had a more eventful history. From the earliest records we have, which extend to Saxon times, it seems that the Tower pound was the only standard up to the reign of Henry VII. It was $\frac{3}{4}$ oz. less weight than the Troy pound, which was probably introduced from France after the wars of Edward III. The avoirdupois pound is also thought to have come from France about the same period. The Tower pound was so named because it was the pound of the Saxon mint, which was kept at the Tower. The Troy pound was the *livre de Troyes*, which became popular in consequence of a fair for which that French town was famous. The avoirdupois pound was the favourite pound of those who liked to have good weight—*avoir du pois*. This was a medium between two "merchants' pounds" which were used in England in commercial transactions, one weighing 6,750 grains and the other 7,200 grains. It was legalised by a statute of Henry VIII., which ought to have been kept in force. It ran thus:—"Beef, pork, mutton, and veal shall be sold by weight called *haver du pois*. No person shall take for a pound of beef or pork above one half-penny, nor for a pound of mutton or veal above three farthings, and less in those countries where they are sold for less."

A GERMAN OPINION OF THE TRADE ASSOCIATION.

It is pleasant to have one's doings noticed, if not commended, by an intimate friend; it is doubly so when the acknowledgment of interest is made spontaneously by a stranger. This reflection is suggested by the *Pharmatische Zeitung* for August 26, which, under the heading "Die Englische Chemist Defence Association," devotes a column to the proceedings at the Birmingham Conference in July last, and to the circumstances which led to the action then and there initiated. The article bears an unmistakable impression of the official stamp, for its whole tendency is to reconcile the "patient German, who becomes accustomed in time to all things, even to actively unjust and oppressive regulations," to the *status quo* of pharmacy revision in Germany. It is written in a spirit kindly to Englishmen, and humorously contrasts the triennial revision of pharmacies in the Fatherland, where the commissioners appointed for the purpose, after thoughtfully notifying the apotheker of their coming, inspect his stock as to quality and arrangement, according to the official tables, with the condition of affairs in England. There, says the *Zeitung*, "the apotheken revisionen" (public analysts) "perform their functions otherwise. One fine day a harmless prescription for an iodide of potassium or quinine mixture makes its round among the druggists of some loyal town of Her Majesty, and in the evening the mixtures are found—the druggist as yet ignorant of the fact—in the

office of the public analyst, who turns the light of his learning on each individual bottle to satisfy himself that it contains the prescribed quantity of iodide of potassium or quinine. Woe to the druggist who, either from avarice or carelessness, has departed from the instruction of the prescription! Ten shillings fine is a certainty to him, and trust the zealous, argus-eyed, English press for blazoning his name. To the English druggist, who is indeed subject to more strict control than his Continental brother, the bonds begin to be irksome. It is no agreeable thing for an honest shopkeeper who has a special knowledge of his business, to be in perturbed expectation of a visit from the public analyst, who pounces upon some particular article, and next morning raises an alarm about the quality of it, at the same time that no standard of the same exists." The English druggist will accept with dignity the pity of his Continental brother, will agree with the latter in his remarks anent the "insidious provisions of the Adulteration Act, in whose thick-meshed net one honourable apotheker after another is constantly being caught," and will prove to him that his graceful compliment to the English character in general is deserved by the English pharmacist in particular. The *Pharmaceutische Schutzvereins* or "Chemists' Defence Association" owes its existence to our prompt recognition of the truth that "union is strength," and we doubt not is grateful to our contemporary for the assistance which his appreciative notice must afford. At the same time, should the English druggist ever have presented to him the alternative of either the grandmotherly care which the German apotheker receives from Government, or the open injustice of our Adulteration Act, we venture to predict that he will, to the extent of his power, follow Mr. Barnard Proctor's advice, and of two evils choose—neither.

THE SALE OF POISONS.

THE Coroner of Spalding has endeavoured to distinguish himself lately by perversely misreading the Pharmacy Act. At a recent inquest he promulgated the theory that the sale of opium and all the poisons in the second part of the schedule required registration just the same as those in Part I. The coroner, it seems, has since met with support in his opinion from a paper entitled *The Justice of the Peace*, edited, we are told, by three anonymous barristers. The coroner and his distinguished friends are so obviously wrong in their interpretation of the Act that the Pharmaceutical Council seems to us quite justified in declining, as it did at its last meeting, further controversy on the point, or submission of the question at issue to the law officers of the Crown, as the coroner modestly suggested. But there are many indications that next session some more stringent regulations in regard to the sale of poisons than now exist will be demanded in Parliament. Assuming the arrival of such an agitation, will it be the policy of the trade to resist it or to attempt to mould it into a practicable and useful form? We know that many druggists will promptly object to any further trouble whatever being imposed upon them in reference to the sale of poisons. But such objections, unless weighted with sound reasons of public advantage, will have very slight influence on the legislature should it resolve that more distinctive difficulties are to be placed in the way of the purchase of poisons by the general public. It seems to us that the trade will do well to join cordially with the legislature in this matter, and for its own sake, as well as for the public good, agree to some convenient system of checking the reckless sale of dangerous substances. To extend to the sale of all articles which can be deemed dangerous the elaborate registration which is properly required in the case of the rare alkaloids and the more deadly poisons can hardly, we think, be requisite. Certain

poisons are used largely in commerce, in the arts, and in many innocent ways, to such an extent that great and absurd inconvenience would result if some theoretically beautiful method of preventing all suicides, murders and accidents should be applied indiscriminately. Every purpose which the nation can fairly demand would in our opinion be gained if a simple record of every such sale were kept by the chemist, and this might be done at choice either by entering the sale in a book or by filing an order signed by the customer. Such order forms might be kept ready printed, and where frequently used might be supplied to the customers. If any bill should be introduced the trade ought to be ready with its suggestions; and the occasion would be very suitable to obtain the rectification of certain anomalies at present existing; that, for instance, which permits the most deadly poisons to be sold by anybody if covered with a patent medicine stamp. The Pharmaceutical Council and the Chemists' Trade Association might do well to consult together on this important subject, and if their views should be in harmony with those of their constituents generally, as well as reasonable towards the public, they would exercise a large and just influence on those whose duty it would be to settle any new legislation. We cannot think it would be difficult, and we are sure it would not be unfair, to obtain at the same time a clause which should in actual fact, and not only nominally, as now, confine the trade in poisons, and consequently in dispensing also, to legitimate chemists and druggists, and stop once and for ever the miserable leak by which a big share of the pharmaceutical business escapes into the hands of irresponsible co-operative societies and civil servants.

THE BRUSSELS EXHIBITION.

THERE has existed for some years in Brussels a Royal Society of *Sauveteurs*, a word which defies concise translation, but which implies that the members of the society interest themselves expressly in works and processes having for their object the saving of life under all circumstances. This society, as most of our readers are aware, has this year organised in the capital of Belgium an exhibition and a congress. With the latter we are not at this moment concerned; the exhibition, however, demands a brief notice in these columns, rather in consequence of its title than of its merits. "Under the high protection of His Majesty the King, the honorary presidency of His Royal Highness Monseigneur the Count of Flanders, and the patronage of the city of Brussels;" with "the favour of sovereigns, princes, governments, and the most eminent men of Belgium and foreign lands;" under the management of a limited liability company, with a capital of 600,000 francs, one might, we think, have hoped for something a little better than a mere warming up of some of the remnants of the Vienna Exhibition of 1873. A cheap building, erected in what the Bruxellois are pleased to call their park, which, however, does happen to be near the middle of the city, is filled with a fairly appropriate collection of goods from England, France, Belgium, Germany, and Russia. A few other countries are represented, but not to any great extent. Next to Belgium and Germany Great Britain numbers the most exhibitors. The Belgian display is very shoppy, most of the tradesmen of Brussels having found means of getting a foot in somehow under the head either of *hygiene* or *sauvetage*. France makes the prettiest display, and the collection of "elegant pharmacy" made by the representatives of our art in that country is really interesting and excellently arranged. Rigollot, Limousin, Rieqles, Raspail, Vie-Garnier, and Hottot-Bondault are prominent names in this collection. Messrs. Hermann Lachapelle & Co. have a fine exposition of soda-water machinery, ice-making ditto, syphons, and other apparatus, in the grounds. In the English department Messrs. Chance Bros.

are most prominent with a splendid dioptic lantern. Mr. Rimmel is present, of course, his *raison d'être* being some aromatic vaporisers for sanitary and disinfecting purposes. Messrs. Richardson & Co., of Leicester, and Southall & Barclay, of Birmingham, are the champions of English pharmacy. Mr. Pulvermacher exhibits a Venus somewhat liberally chained up with his galvanic bands, a treatment which according to general repute that lady hardly needed. Price's Candle Company are there, while the Humane Society, the Life Boat Institution, and the London School Board are also large contributors. The foreigners have made large use of salicylic acid as a disinfectant, and there is a good collection of surgical instruments from all countries. Of course ambulances, fire-escapes, and all sorts of life-saving apparatus are in abundant display, and to specialists the exhibition would be interesting if it were not that nearly all the objects are familiar. The general public, we believe, has found the collection too dry, and the scantiness of the company present on the occasion of our visit seemed somewhat threatening in regard to the funds of the "société anonyme" which, with the best possible motives, has got up the show.

THE DEGREE MANIA.

SUBJOINED is a copy of a circular which has been sent round pretty largely to druggists in the United States:—

"Gentlemen of good moral character, who have been in the druggist business three years or more, can obtain the degree of Doctor of Pharmacy from the University College of Pharmacy, Penn., upon writing an essay on some drug or combination of drugs.

"Fee, \$35.00, which includes diploma, registration certificate, and tickets.

"Address, with stamp,
"J. R. YUILLE, *Secretary*,
"Boston, Mass."

It will be observed that the capture of a very few flats will be sufficient to pay the expenses of this circular, and the same trick has paid so well hitherto in other classes of American society that notwithstanding its transparency we have little doubt a sufficient income will be realised in this venture. Mr. Yuille will then, no doubt, turn his attention to export trade, and English druggists of good moral character will be tenderly looked after. We have no wish to spoil the trade of an enterprising Yankee, but we urge any weak brother who might take a fancy to the bait to ask the price of parchment at his nearest stationer's before he sends 7 $\frac{1}{2}$ over to Boston for a small sheet of it.

CENTENNIAL AWARDS.

We have received a copy of the *New York Times* of September 28, containing a partial list of the awards of the judges to the exhibitors at the Philadelphia Exhibition. We are not disposed to publish a selection from this list until we receive the complete series. But the extraordinary list before us does seem to call for some comment. The journal we have referred to gives the perfect list of prizes up to the end of Group II., but only publishes the list of successful exhibitors in the United States and Canada for the remaining 26 groups. The list thus compiled, and printed in very small type, occupies 4 $\frac{1}{2}$ pages of our contemporary. As an instance of the profusion with which the awards seem to have been scattered, we may mention that, if we understand correctly, there have been over 700 medals conferred in the chemistry and pharmacy group alone. Nor does this by any means comprehend the whole, for the classification of goods has been so ridiculously muddled that it is impossible to tell in which section to look for particular specimens. For example,

Group III. is entitled "Chemistry and Pharmacy, with Apparatus;" Group XXIV. represents "Instruments of Medicine, Surgery, &c." The distinction, one might have thought, would have been clear enough, but, unless there is an error in the published list, the distribution of the exhibits must have been made with no intelligence whatever. While matches, blacking, sewing machine oil, confectionery, and perfumery make up a good part of Group III., Group XXIV. comprises such "instruments of medicine, surgery," &c., as cod liver oil, sugar-coated pills, mineral waters, meat juice, glycerine, essence of ginger, and pharmaceutical preparations generally.

The system of awards, too, is novel, though as yet not quite comprehensible. In all cases, as we understand the report before us, it consists of a bronze medal, with an explanation of "the element of merit in each exhibit, but not pronouncing any one as superior to others." "Each medal," adds the *New York Times*, "is thus accompanied by a brief report stating why the exhibit was deemed worthy of award, and a copy of this report, which is signed by a judge and approved by as many in the examining group as concurred in it, is to be furnished to the exhibitor, with authority to reproduce it in any way deemed most to his advantage. It is in the substitution of the written opinion of the judges in each case, in place of the anonymous verdict of a jury, and not in the medals, that the value of the award consists." The ingenuity of the judges must have been alarmingly exercised in finding distinct remarks for some ten thousand testimonials. Having regard to the usual modesty of specialists, too, the suggestion that they should reproduce the opinion in any way they may deem most advantageous is amusing for its simplicity. Where is the exhibitor who has tried to conceal the fact of a medal being awarded him? We should like to see that gentleman. We should like to have his photograph.

THE WAYS OF ANALYSTS.

THE Town Council of Newport (Isle of Wight) have been greatly exercised of late on the water question. After much anxious meditation, they appear, however, to have decided on the purchase of some adjacent waterworks. But before this little transaction was completed, an obstacle in the shape of the Local Government Board stepped in. The fluid for which they were bartering must first be analysed. Away went a gallon to Dr. Hassall, with the Town Council's compliments. That eminent gentleman passed it through his laboratory, and in due time Newport was made aware of the result of that mysterious process by the receipt of a report, and a bill for fifteen guineas. This latter, the local committee were convinced, was an error on the part of the doctor, and they therefore hastened to give him the opportunity of reducing his charge. Unfortunately for the ratepayers of Newport no insidious blunder had crept into the veteran analyst's ledger. Not only was the amount correct, but, according to him, the fee was strictly moderate. To crown their disaster, the Town Council were consoled at their next meeting with the information that they might have procured an "equally good and reliable analysis for two guineas."

Apropos of analysts and their charges we may reproduce here a sweet little story that we heard the other day of a certain eminent professor of chemistry who is nevertheless not too exalted to undertake a commercial analysis.

Not long since there drove up to the door of this famous professor's residence an old-fashioned tilted cart, out of which there emerged a quaint little man, evidently bent on important business. He was speedily ushered into the great man's consulting room, into which also entered, after a decorous delay of some minutes, the analyst himself. On being interrogated as to his business, the visitor stated that he was a provision dealer

from the country, and that he had just effected a purchase of some Irish lard, which, however, having the fear of God and the Adulteration Act before his eyes, he hesitated to sell until it had been carefully examined by the renowned chemist and pronounced pure. Our professor, of course, at once expressed his willingness to undertake the analysis, and requested his new client to furnish him with a sample. Thereupon the latter disappeared, but in a few moments returned from the tilted cart shouldering a solid firkin of fine Irish lard. As might have been naturally expected he wanted the analysis performed there and then before his eyes, and would barely give credence to the wise man's statement that the analysis would take at least a week, at the expiration of which time his client might call again.

A very superficial examination the next day convinced the professor that he had secured a remarkably fine and perfectly pure specimen of the fat of the *rus scrofa*, and he accordingly sent the whole cask-full down into the kitchen for family use. Punctually at the end of the week his client reappeared anxious for the report. This was soon placed in his hands—fee, five guineas, and the countryman's face shone with delight at the honour of having to pay for an incomprehensible document and a clear conscience. Yet still he waited, hat in hand. "Can I be of any further assistance to you, my good sir?" inquired our professor. "Noa, thank'ee, zur; nowt to-day. I be only a waiting for that firkin o' lard." "Good heavens! my friend, you perfectly astonish me. I have consumed the whole of the lard you brought me in the analysis; chemists never return samples."

PHARMACY IN THE FAR WEST.

THE announcement in our last number that the Pharmaceutical Conference had accepted an invitation for 1877 from the Plymouth, Devonport, and Stonehouse Chemists' and Druggists' Association has drawn some attention to the position of pharmacy in the Far West. To the majority of the members of the Conference the very existence of the society just named—our space is too limited to give its title in full very frequently—was unknown. Perhaps a few particulars concerning it will be of interest.

The association was formed at a large and influential meeting of the chemists and druggists of the three towns, held on June 27 at Plymouth. The following gentlemen were elected a committee of management for the first year:—President, Mr. F. Codd; vice-president, Mr. A. P. Balkwill; hon. sec. and treasurer, Mr. R. J. Clark; committee: Mr. G. Breeze, Mr. J. Burdwood, Mr. O. C. Coker, Mr. A. D. Davey, Mr. W. Dyer, Mr. S. Elliott, Mr. H. P. Hearder, Mr. H. T. Netten, Mr. S. B. Turney.

At a second meeting, held on July 17, a set of rules was adopted, the publication of a price list was decided on, and it was also resolved to invite the Pharmaceutical Conference to Plymouth for 1877.

The annual membership fee of the society is 2s. 6d., and sixty names are now enrolled. Its especial objects are thus defined:—To promote early closing and uniformity in prices as far as possible; to defend members illegally or vexatiously proceeded against under any of the Acts of Parliament affecting the trade; to promote the exemption of all registered chemists and druggists from serving on juries; to take cognisance of any proposed legislation having special reference to registered chemists and druggists. The committee has recommended the following resolutions to the earnest consideration of the members:—That all members close on Bank Holidays as on Sundays; that all members endeavour to discourage Sunday trading entirely; that all members endeavour to close earlier

on Wednesday evenings; that after the hour of closing all lights in the shop and elsewhere be as far as possible extinguished.

We have quite recently received a copy of the Dispensing and Retail Price List, published by the association. It is sold for a shilling, and will be found very complete. Some few of the retail prices named strike us as almost too high a standard. Sixpence a bottle for soda water, for instance, is too much to charge, while 8d. per lb. for chloride of lime, 1d. each for poppy capsules, and some other instances, seem a little above country rates generally. The dispensing prices named are by no means immoderate, though chemists generally would be glad to get the rates there given. The scheme, if carried out fairly in the district, will greatly benefit the pharmacutists of the three towns, of whom, within the next twelve months and afterwards, we shall no doubt hear much more than formerly.

MR. JOHN SIMPSON.

WE very much regret to have to include in our obituary this month the name of Mr. John Simpson, of Edinburgh, of the firm of Duncan, Flockhart & Co. Within little more than five years four of the partners of that celebrated house have been removed by death. Mr. Flockhart, Mr. Duncan, Mr. Tait, and now Mr. Simpson, have been taken from us since 1871. The rest were more or less advanced in years, but Mr. Simpson had scarcely reached his prime. He died suddenly on September 22 last, at the early age of 39.

It was only a few weeks ago, at Glasgow, that we had the pleasure of making his personal acquaintance. Somewhat retiring, Mr. Simpson possessed in an eminent degree that peculiar grace of manner which is the truest expression of a generous soul, and no one could come into contact with him, even for a brief period, without being at once attracted by the charm of his cheerful and thoughtful conversation. This was the impression carried away from Glasgow by many pharmacutists from the South, who there met him for the first time. A more intimate acquaintance, as we were frequently assured by his fellow countrymen, never failed to develop that first impression of esteem into respect and affection.

Mr. Simpson was actively associated with many of the religious and charitable associations of Edinburgh. His piety was by no means limited to such, however. In business relations, in private life, and in every duty, Mr. Simpson left the mark of his modest, unaffected, unassuming excellence. He leaves a widow and five children. Those who knew him well will mourn him deeply; those who knew him slightly will most sincerely offer their respectful sympathy.

ONE FOR THE DOCTORS.—The following *bon-mot* is of French origin. A lady in delicate health asks a cynical friend whether she shall consult an allopathic or a homœopathic practitioner. "It matters but little," is the reply. "The first will kill you, the second will let you die."

AN AMERICAN naturalist, while investigating the causes and effect of the poison of a wasp sting, nobly determined to make of himself a martyr to science, and accordingly handed his thumb to an impatient insect he had caged in a bottle. The wasp entered into the martyr business with a great deal of spirit, and backed up to the thumb with an abruptness which took the scientist by surprise. He was so deeply absorbed in the study of remedies that he forgot to make any notes, but his wife wrote a paragraph in his note-book for the benefit of science, that the primary effect of a wasp sting is abrupt and terrific—and such words!



AND

Literary Notes.

Chemia Coartata, or the Key to Modern Chemistry. By A. H. Kollmyer, A.M., M.D. London: J. & A. Churchill. 1876.

UNTIL objects in the kaleidoscope cease to arrange themselves in different forms, and fail to reveal, at each successive turn of the instrument, some fresh combination of colour or outline, we do not fear that there will be wanting writers on chemistry capable of introducing into their manuals, or text books, some feature of what they are pleased to call "originality." The book before us is an illustration of the truth of this conjecture. Not content with the novelty of a seductive title, in which a Latin participle is cunningly dove-tailed to a pseudo-Arabic noun, and still less satisfied with a grammatical construction unquestionably his own, the author in his preface lays claim to the conception of the far more brilliant idea of arranging his book in tables, a "form," he says, "for the most part original, and affords (*sic*) many advantages, independent (*sic*) of its being more easily remembered and more readily understood." A captious critic might suggest that it is the facts which such tables contain, rather than the tabular form itself, which should be commended to the student's mind, and also that as a general rule it is more desirable to understand a subject in the first place, and to proceed to remember it in the second. But not being captious critics, we pass on. The first five pages of the book are devoted to a very general, and by no means accurate, explanation of the principles of chemical philosophy. Some time since, when the Licensing Bill was before the House of Commons, we recollect holding a lively argument with a friend on the relative interpretation of the terms "town" and "village." The discussion waxing warm, and conviction on either side seeming hopeless, we agreed to refer the decision of the point to a well-known standard dictionary. On consulting this authority we read thus:—"Town—a collection of houses larger than a village." So far, so good, and it only remained for us to ascertain the precise definition which our arbitrator attached to "village" as his standard of comparison. We consulted him again, and were rewarded with this admirable distinction:—"Village—an assemblage of houses less than a town." With much lucid exposition of a like kind are the elementary truths of chemistry treated by the author of "*Chemia Coartata*." Thus we are informed: "A compound body can be separated into two or more simple ones: a simple body cannot." If this is the clearest mode of stating the theory that all matter is built up of a certain fixed number of elements we shall be compelled to think that the number of simple bodies in the world is somewhat in excess of 64. Dalton's splendid hypothesis gives place to the following characteristic specimen of text-book dogma: "The smallest quantity to which an elementary substance can be reduced is called an atom: it must therefore be regarded as a definite quantity; moreover, the atoms of all bodies are of the same size, yet they are found to differ greatly in weight. . . ." Had we the privilege of being pupils of Doctor Kollmyer we should certainly insist, in face of the above statement, upon his resolving, *coram populo*, any two elementary substances that we might select, *e.g.*, hydrogen and mercury, into their constituent atoms, and we should then require him to demonstrate, by actual measurement of the ultimate particles so obtained, that an atom of the one is of precisely the same dimensions as an atom of the other.

We are told in the preface that the work will be found "especially adapted to the wants of students intending to present themselves for examination." Imagine some hapless youth appearing before an examiner with views of nomenclature gathered from such a paragraph as this:—

"If two acids are formed with one element, then the name of the higher terminates in *ic*, and the lower in *ous*; as sulphuric, sulphurous, &c."

The description of the sources, properties, &c., of the various elements and their compounds, with which the rest of the book is taken up, does not essentially differ from descriptions of the

same substances which may be found in any ordinary text-book. The only points of distinction are that the tabular form involves a more clumsy mode of expression, and the information given is, as a rule, less accurate. The terms "supporter" and "non-supporter" of combustion are still used in their ancient and wholly unjustifiable sense, and on page 26 we learn a new fact in physiological chemistry when we read that animals eat plants and convert them into phosphates. Ammonia gas (NH_3) is represented to be the same thing as spirit of hartshorn, and nitrate of potassium is said to be a native of the East Indies. The diamond is called *chrySTALLINE*, and a distinction is made between the behaviour of the metals potassium and sodium, when exposed to the air, in the statement that the one oxydises, and the other oxidises.

A synopsis of poisons, with their antidotes, concludes the book. In compiling this most miscellaneous list, the author has evidently acted on the theory that everything is poisonous, provided you only take enough of it. Amongst the substances for which an antidotal treatment is given are acetic and tartaric acids, aloes, scammony, hiera picra, broom tops, and *quack pills*!

It is a pity that there is so much to find fault with and so little to commend in a book bearing the dulcet title "*Chemia Coartata*." But our libraries are crammed to repletion with manuals of chemistry, and the time seems to have come when anyone with a smattering of scientific knowledge thinks that a few score pages of print, compiled more or less at random from the works of standard authors, constitute a sufficient excuse for thrusting another volume upon shelves already greening beneath the weight of many such useless burdens. Against this invasion it is a duty which we owe alike to ourselves and our readers to set a bold front, and this can only be done by rigidly scrutinising the credentials of each fresh aspirant to a place in chemical literature. Like *The Key to all Mythologies* with which the learned theologian in "*Middlemarch*" hoped to electrify the world, but which was destined ever to remain in its manuscript stage, this "*Key to Modern Chemistry*" would have reflected not a jot less credit upon its distinguished author had it never been allowed to emerge from the tranquil seclusion of his private desk.

A Systematic Handbook of Volumetric Analysis. By Francis Sutton, F.C.S. Third edition. London: Churchill.

For two years the only work on volumetric analysis in the English language has been out of print. The delay which has occurred in issuing a new edition has not, however, been due, as is often the case, to any lack of demand for it on the part of the public, but solely because the author has been prevented, by that inexorable tyrant—time—from experimentally testing the value of the great number of new methods which the past five years have contributed to this branch of analysis.

No one will now be inclined to regret the postponement of the publication of the present volume. It is an easy task to cram a book with the new methods and improved processes which aspiring striplings describe at great length and with no small assurance in the columns of our scientific contemporaries. But an author of established reputation could scarcely be expected to lend the weight of his name to alterations which might turn out to be the reverse of improvements, or to crude processes which experience might prove to be worse than useless.

A considerable portion of the book is occupied with a description of the various methods of water and sewage analysis. Mr. W. Thorp, B.Sc., who, it will be remembered, prepared several important sections for the second edition of the work, has revised and largely increased his valuable contributions. Messrs. Frankland and Armstrong's process, which seems to be living down the abuse with which it has been so freely assailed, is described by the authors in an elaborate monograph.

Professor McLeod's name is a sufficient guarantee of the excellence of the information relating to gas analysis, and the author's own special experience in the examination of soils and manures renders that department of the book of pre-eminent value.

In saying that the third edition of this hand-book is simply indispensable to every analytical chemist, as well as to students commencing to fathom the mysteries of volumetric manipulation, we think we are giving expression to the highest praise we are able to bestow on a work which has for twelve years held its own against all competitors, and the excellence of which, though it may be emulated, will certainly never be surpassed.

"HEADACHES, their Causes and Treatment," by Dr. Shulldham (London: E. Gould & Son), is a small, pleasantly written treatise on a subject so familiar to multitudes. The author is an advocate of the homœopathic plan of treatment as far as medicines go. He says he prefers those "quiet, gentlemanly" sorts of drugs which "go straight to the part without much ado, just as if they were doing nothing at all, like quiet servants, who, when the bell is rung, appear and disappear noiselessly, and you find that after a few moments of divine silence your dinner is served or its fragments removed." In this little work the various kinds of headache are carefully distinguished and described, and useful common-sense suggestions for their general treatment are presented.

ONE last work from the pen of the late Dr. Ruddock, lately published under the editorial care of Dr. Shulldham, will not be found the least useful of the books prepared by that prolific author. It is entitled "Essentials of Diet; or Hints on Food in Health and Disease."* The subject has been treated somewhat abundantly of late years, and there is little excuse now for any well-read person to torment his stomach with food not suitable for it. The danger is that a course of this kind of literature may lead one to torment his imagination with distorted pictures of the frightful effects of almost any meal he may happen to take; and we are inclined to think that dyspepsia is almost as closely dependent on the imagination as on the stomach. Dr. Ruddock's small treatise, like all his works, is simple and practical. It gives no elaborate chemical tables of analyses, nor does the author treat his invalid clients like criminals in a prison, weighing out to them the exact amount of nitrogenous, carbonaceous, and mineral foods which they are to take in each 24 hours. Half the book is devoted to a consideration of the qualities of the various kinds of foods, and the rest is occupied with chapters on the diet most desirable in the various disorders resulting from dyspepsia, and under special circumstances. A series of useful recipes is added, which tell how to prepare in the best way many of the ordinary household forms of diet, suitable especially to the sick room.

THE MOST recent volume of the International Scientific Series (Henry S. King & Co., London) is a very striking one. It is entitled "The Theory of Sound in its Relation to Music," and is written by Professor Pietro Blaserna, of Rome. Of course the subject is one which very essentially requires practical illustration, and the Royal Academy of Music will probably laugh at the idea of a student getting anything like a conception of the laws of harmony from mere letterpress and woodcuts. The Italian professor, however, succeeds remarkably well in conveying to anyone who will give careful attention to the subject a very satisfactory general notion of the laws by which musical composition is governed. First of all, sketching the laws of sound and proving them, these are traced in the effects produced by the various forms of instrumentation and by the human voice. This leads on to the laws of harmony, which are illustrated by the long and varying history of music, from the days of the Greeks down to Richard Wagner, with his "music of the future." The author is a cordial admirer of the German genius, and he is evidently also something of an enthusiast in his belief in "music as a means of dramatic expression." It would improve his book scientifically if he could be persuaded to tone down a little of the conventional fiction under this head in which he seems driven to indulge. It is not strictly accurate to tell us that a certain piece of music, apart from the text and the operatic accessories, describes "with vividness and incomparable feeling all emotions, from patriotism to love, and from love to terror." A dozen competent musicians hearing for the first time one of Mendelssohn's "Songs without Words" would probably interpret it in a dozen different ways, and perhaps none would exactly conceive the idea of the author. The true grandeur of great musical productions lies not in the *vividness* but in the poetic *vagueness* of their expression.

MESSRS. CHAPPELL & Co., of New Bond Street, have published in pamphlet form an interesting paper recently read before the Musical Association of London by Mr. Lennox Bröwne, "Surgeon to Her Majesty's Italian Opera," &c. The author is also surgeon to the Throat and Ear Hospital, so that his experience specially qualifies him to discuss the subject named as the title of this paper—"Medical Science in Relation to the Voice as a Musical Instrument." It appears to be undecided whether the human voice should be likened to a wind,

a reed, a string, or a flute instrument. Probably it combines all. Mr. Browne, however, seems to consider that variations of pitch have been too readily attributed to the tightening or relaxation of the vocal chords in the throat. As we understand him, he believes that muscular action on the windpipe is a better explanation of the power of emitting a series of notes. We have no opinion at all in this regard, but there is one point on which we are certain Mr. Browne is wrong. "The instances," he says, "in which the auditory nerve is impaired so that the subject of it is not aware of his faulty intonation are fortunately rare." What a blessed truth this would be if it were one at all. Let Mr. Browne extend his observations a little beyond Covent Garden, and he will retract that most inaccurate sentence. Respecting the treatment of the voice, Mr. Browne objects to stimulants, and he quotes from a private letter from Mr. Sims Reeves on this point. That gentleman considers "all alcoholic stimulants detrimental." He recommends a glycerine lozenge; very rarely a glass of claret and water; or in some cases a tablespoonful of beef tea. Mr. Browne says he has had analyses made of all the patent voice lozenges, and finds that all contain more or less cayenne pepper, or some like irritant, and are consequently harmful. He also assures his readers (somewhat unnecessarily) that he has no connection with a particular lozenge bearing the same name as his own. However useful those may be, he says, as bronchial trochés, they are totally unsuited for voice lozenges.

A "BOOK OF MEDICAL INFORMATION AND ADVICE" (Nelson, London and Edinburgh) is the title of a small volume which we alluded to recently in our Notes and Queries column, quoting from the *British Medical Journal*, wherein it was warmly recommended by a physician as a family handbook. It was originally published anonymously, but the publishers now state that it was written by the late eminent physician, Dr. Warburton Begbie, of Edinburgh. It consists of a series of articles on the various more or less familiar diseases, describing briefly their characteristics and the general method of treating them. The style of the book is the reverse of sensational, the information is of the most modern character, and the whole is written expressly for persons of intelligence, but who have not had a special medical education. We should think chemists might find a sale for such a book as this if they placed it on their counters. To give some idea of the style of the book, we select one of the shortest of the articles as a specimen:—

Nettle rash, in medical language Urticaria (from the Latin *urtica*, a nettle), is a form of cutaneous eruption, so called from the resemblance it bears to that produced by the stinging nettle. There are little elevations, having a white or whitish centre and red circumference. The eruption is accompanied by much itching, and frequently by no inconsiderable degree of febrile excitement.

Nettle rash is closely connected with derangement of the stomach; it is often, in fact, an evidence of indigestion. Particular kinds of food, specially shell-fish and certain vegetable substances, scarcely ever fail to produce it in some individuals; in others it seems intimately allied with a rheumatic constitution.

Nettle rash may last only for a few hours, or continue for many days. For its removal a proper regulation of diet and the use of laxative medicine (rhubarb and magnesia) are required. Little benefit results from local applications, but a lotion may serve to allay the at times intolerable sensation of itching. For this purpose, a half drachm of sugar of lead in four ounces of rose water, with two teaspoonfuls of laudanum added, will be found useful.

THE EDUCATION OF A CHEMIST AND DRUGGIST.

THE following address to the students of the School of Pharmacy, 17 Bloomsbury Square, was delivered by Mr. Barnard S. Proctor, on Wednesday, October 4, 1876:—

STUDENTS OF PHARMACY.—The "few words of encouragement and advice" which it is this evening my duty to address to you must of necessity be in many respects like the addresses which have been delivered in former years with the same object, so much so that I feel no small difficulty in imparting to them anything like freshness and vitality.

My simple duty is to tell you all to be good boys and learn your lessons well, and that then you will reap the reward which all good boys receive. That is a plain statement of the case with the great merit of brevity. Why should I say more? I do not much like sermonising, and I may add I do not like

* London: Homœopathic Publishing Company.

sermonising much. My belief is that too frequent repetitions of good advice are debilitating rather than strengthening to the moral tone of any but those of very tender years. Now I expect you have all cut your double teeth, passed your Preliminary, and do not require to be fed upon any of those insipid foods so highly recommended for infants and invalids. Do not mistake me; though I do not like sermonising, yet I heartily admire excellence in moral and intellectual life. I enjoy to express my admiration of it, I also enjoy right heartily to give a vigorous thrust at any evil doing.

In performing the duty which lies before me I will endeavour to address you in a homely and friendly way, as I would old acquaintances, and thus avoid the distant or formal manner which too often separates the monitor from his audience.

You have chosen a particular road for your life's journey, and are about to start upon the track which I have travelled for more than twenty years, and you are desirous, I doubt not, of profiting by the experience of myself and others, with the view of making your journey with as much comfort and success as is attainable.

Your professors are your guides, and your text books teach you the language and topography of the district through which the path you have chosen to follow will take you: but there is still room to hear, and perchance to profit by, the tale of a traveller who has had some of the same experiences which you are about to undergo.

But, if I tell you about *my* journey, I must talk about myself—and that is egotistical. Well, suppose it is; I fear the fact must be admitted; I *am* and I intend to be egotistical, and if that requires excuse, my excuse is that I wish to convey to you the benefit of my experience, and to speak only that which I know. I will therefore keep pretty much to my personal experience, as by so doing I can express myself with the greater confidence.

Speaking now of the pursuit of pharmaceutical studies as the one thing which it is more particularly my province to dilate upon, I will say a few words first upon the mode of learning, and then upon the kind of learning, which is desirable.

You may have heard of a learned pig which could point to the number 18 when asked, How much is twice 9? That is the very lowest species of learning. It had learned, but it did not know. And from this upwards we have all grades, to the highest of which the human mind is capable. Learning, knowing, understanding, and that combination of intellectual faculties by which new truths are evolved from old ones.

It is quite necessary for anyone who would excel that he should exercise all these powers.

Let me for a moment further illustrate the difference between learning and knowing. You have all learnt the multiplication table, and could say it from beginning to end, and if I were to ask you how much is five times seven, or eleven times twelve, you could give me the answer without consideration, in which case you may be said not only to have learned it, but to know it. Probably also you have all learned a verse which commences

Thirty days hath September;

but I rarely find anyone who can tell the number of days belonging to each month without a moment's consideration, and often only by the aid of repeating the verse and noting anew that the months containing 30 days are September, April, June, and November. In this case they have *learned*, but do not *know*, how many days there are in August.

All facts having a direct and practical bearing upon your daily routine work should be known as you know your multiplication table. With regard to facts which meet with application only once a month, it may suffice if you know them as you know how many days there are in August. Learn them, and if possible retain such a clue as will bring the knowledge to your mind by a moment's consideration. Information which is only wanted at long intervals is sufficiently in your possession if you retain the outline and know where to refer for the details. If you were all men of remarkable genius it might be unnecessary thus to discriminate between the more and less important items of knowledge. In all cases where you desire to retain a useful outline of a subject take care that you understand it thoroughly at the time you read it, as in that case the impression left will be much clearer and more permanent.

Knowledge which is permanent is almost invariably of slow growth, more especially if it be in any branch of knowledge for which you have not a natural aptitude or liking. I believe I

shall enforce this most effectually by giving you a page from my own history.

When I was a boy I had a taste for mechanics and physics, and my desire was to be an optician and philosophical instrument maker; but my father said I had to be a chemist and druggist and help him. I had no great dislike to the business, so without much reluctance I made up my mind to follow it and help him to the best of my abilities. I had some liking for chemistry, but none for botany, pharmacy, nor materia medica, and Latin was always drudgery to me. After I entered the business I continued for twelve years to wish and to hope that I should be some day released from it to follow a more congenial occupation; but I never ceased the endeavour to make the best of the position to which I was bound by circumstances, which had more weight with me than my personal inclinations. In the days I speak of local schools of pharmacy were unknown, the guidance of anyone who had passed the ordeal of a pharmaceutical examination was not within reach. I remember with what reverence I looked up to an associate who passed through our town after having accomplished his Minor at the second attempt, and how great an advantage I thought it to hear from him what books I should read. If you note all these circumstances you will perhaps admit that it may be worth while to know by what method of study I was able to pass my examination without the usual preparation of a few weeks' or months' grinding.

The first and most important thing was that I began my apprenticeship with the intention of making myself as well acquainted with my business as any man in Newcastle, and commenced from the first to pick up information whenever I had an opportunity, for I anticipated that it would require all the study I could take during a seven years' apprenticeship to pass my Minor, and then I hoped to go to London to prepare for the Major, in which hope, however, I was disappointed. I had but few books, and those probably not in all cases the best; but I took care to keep their contents constantly before me, and to understand them as I went along. I should like to impress you strongly with the importance of diligent husbandry in the cultivation of knowledge.

"True knowledge is of slow growth."

"He who would see wisdom must work and weary not."

More students fail through making haste to get on than from slowness of perception. It is not the want of finish but the want of beginning and of going on where the weakness lies. If there are little hollow corners in your foundation the superstructure is sure to be shaky, but it is almost difficult to build a rickety reputation on a good foundation. Students' materia medica cabinets were not known during my apprenticeship, but I made the shop my cabinet, and put on the backs of the bottles and drawers labels indicating the botanical names and natural orders of vegetables, and the formulæ and equivalents of chemicals, so that my daily dealing with drugs, and my dusting of bottles and shelves, became a perpetual reminder of what I learned by reading. He who does not let his thoughts run idle while his hands are at routine work can afford to give his mind a holiday when his body is at liberty.

Now here I am disposed to run counter to a common item of so-called good advice. I have repeatedly heard the classical scholar advise that we should pursue Latin for the pleasure it affords; and the botanist dilate upon the enhanced pleasure of a walk in the country if your vasculum be strapped to your shoulder and your "Flora" under your arm. I do not consider that is at all the right light in which to view the matter. It is like telling a child that its medicine is not nasty, and the natural reply is "Yes it is nasty, and I won't take it." But I am speaking to men, not to infants, and I would say if you can enjoy your Latin and your botany by all means do so, and thank heaven that your path is made pleasant to you. But if these subjects be uncongenial, study them conscientiously, a little more than you think can be reasonably expected of you, and then thank heaven yet more fervently that you can do your duty, be it a pleasure or a pain. If botany be not to you both a pleasure and a relaxation, do not spoil a holiday for the sake of a little half-hearted study. When you do study let it be with earnestness and industry, and when you take holiday let your pleasure be pure and hearty, let it be a bumper full to the brim. And if you must have a "Flora" with you let it not be Babington's or Bentham's, but your sister Flora. If you take your study into your recreation you will become impatient of such a spoil-sport, and jump to a wrong conclusion for want of patience to get at the right one. Now I have no objection to

jumping; I have seen a great philosopher jump, though he was one of the most cautious men the world ever knew, as regards jumping to a conclusion. When I was a boy Faraday challenged me to a jumping match, and with a hop, step, and a jump, he cleared the length of a grass plot in my father's garden, while I could only accomplish two-thirds the distance. I do not think he was studying all the while. No, he was taking a holiday and having a game with the children. It is only small men who must be always studying, and who are afraid of their reputation suffering by the enjoyment of light-hearted pleasures.

I was speaking of study, and I have taken a little holiday digression. Now let me return to the point where I advised that when you are occupied upon uncongenial subjects you should go a little deeper into them than you think can be reasonably expected of you, and I will illustrate again by a little personal experience.

In the days when I became an apprentice it was the custom to accept, in lieu of the Preliminary examination, a certificate from any competent person stating that the candidate had a sufficient knowledge of Latin, arithmetic, &c., to fit him for entering upon the technical studies of the trade. My father obtained this certificate from my schoolmaster, and on presenting it was informed that it would have been more satisfactory if it had come from an unprejudiced witness. Nevertheless, I had gained my status, and then went to an evening school to grind up my Latin, lest the full status had been purchased with a short measure of qualification. I take no credit to myself for this; it was my father's doing, not mine; but the lesson was a good one, and afterwards I had an opportunity of doing the same on my own account as regards botany.

I went through my seven years' apprenticeship, slowly and steadily picking up such knowledge as I thought ought to qualify me for carrying on the business, and always looking forward to the finishing touch which was to be effected by the professors at Bloomsbury Square. But when the time came I met with the grievous disappointment of being told that my services were so much wanted at home that I could not be spared for a few months' study, and must wait a few years for a more convenient season. With this I commenced a more systematic study of chemistry, especially analysis, leaving botany and materia medica, not to be forgotten, but only attempting to keep up what I had acquired, for I wished to get into chemical works where these would not be required; but I did not let them slip, lest I should continue to be baffled by circumstances which, as I said before, had more weight with me than my personal inclinations. So things went on till, in the spring of 1853, I got leave for a ten days' holiday, and I availed myself of the opportunity for presenting myself before the examiners. I went to London almost without notice and quite without grinding, and, as a preparation for the ordeal, I spent the better part of two days in the museum at Bloomsbury Square. There I made acquaintance with the seeds of *croton tiglium* and *ricinus communis*, and filled up one or two other gaps which trade experience had left. But, more important to me than this, I met a number of students, some of whom had passed their Minor examination, and by conversation with them felt my way as to how far I might trust to my knowledge and experience to carry me through. At that time there was in force a pass examination something like the Modified of more recent date: with this I determined to have nothing to do. I would apply for the Minor, and if successful immediately put up for the Major, a policy which by a reference to the *Journal* of that date I find my friend Mr. Kinninmont successfully carried through, but which in my case miscarried, I believe, because my weak voice could not penetrate the poor deaf secretary's ears. I understood him to say I could pass both at once, and it was greatly to my mortification, when the day of examination arrived, to find that I was entered for the pass examination, for I thought myself thus doomed to be a second-class chemist after all.

Among other things that I heard in the museum there was a pretty free criticism of the board of examiners, of the examination specimens, and of the questions that were asked. I heard how well one got through who knew the formulæ for quinine, morphia, &c.; how another was plucked just because he could not answer one little question which escaped his memory at the moment. I heard how savage Mr. Squire was, how sulky was Bell, how particular was Deane, and how lucky I might think myself if I had nothing to do with any of them. I heard it all with a somewhat incredulous ear, and I said to myself, "I know that I cannot remember the formulæ for the

alkaloids and organic acids, but I know that I have a good general knowledge of my business, and I will trust that is better than formulæ committed to memory." Probably many of you will at all times hear such things said, as I heard, and I beg you will turn to them an incredulous ear, as I did. If you have a good knowledge of your business, and no memory of the formulæ of alkaloids, I trust the examiners will find out your merits, and if you have great stores of chemical formulæ at your fingers' ends, and are superficial as regards other things; I trust the board will still find out your merits, and your demerits also. Remember that a bad student never has a good examiner. It was my lot to fall into the hands of Mr. Squire the first thing. He examined me in vegetable materia medica and botany; he found me with a moderate amount of information on the former subject and a deficiency in the latter; in fact, he told me so, and I agreed with him, which was very pleasant, and I thought him a very agreeable gentleman. He asked me many questions, and I asked him some, and got from him some information and advice as to how I should pursue my botany a little further when I returned home. So in botany as in Latin, after I had passed my examination, I began to grind. The other parts of the examination were easily got through; pharmacy had occupied my days, and chemistry the majority of my evenings; so these departments I passed through comfortably, though not without a feeling that in some cases the questions were unreasonably severe, considering that I was entered for the pass examination, and that rejection would disqualify me from membership of the society. For example, I remember the chemical examiner, after a great many other questions, said, "Suppose I were to give you a white powder insoluble in water and not dissolved by boiling with nitric and hydrochloric acid, what could it be?" And when I enumerated chloride of silver, silica, and sulphate of baryta or strontia, he pushed me further as to the method of discriminating which of these four a given specimen might be. I made a mental note, "this is not the kind of knowledge that can reasonably be demanded of an ordinary chemist and druggist," and proceeded to describe to the best of my ability the usual process for such an analysis. He pointed out to me one particular in which I had gone astray, and then, with the remark, "Very good," passed me on. I looked at Mr. Bell with a feeling of pity and half regret that I had not to pass under his hands also. He sat there with an expression of patient suffering on his face. I wished for the honour of his approbation and the pleasure of saying he was not sulky, but I did not get that privilege, nor was I examined by Mr. Deane, for he was chairman of the board that day. However, that gave me the advantage of hearing, in his kindly words, what the examiners thought of me. Now, if I were a modest man, I could not tell you what he said, but as my argument would not be complete without it I will give my modesty leave to withdraw for five minutes.

He told me that the gentlemen through whose hands I had passed had been comparing notes about me, and that each had found me better informed than the majority of the candidates for the pass examination, that they had consequently pushed their questions a little further to ascertain how far my knowledge extended. He reminded me that as I had entered for the pass examination I had not gone through the part of their programme which was conducted in writing, but that the examiners were satisfied from the way I had answered the oral questions that I should have passed the whole of the more stringent examination to their satisfaction, and they felt that under the circumstances it would be unfair not to give me the honorary certificate which they felt sure I deserved. He also told me I must not conclude that my examination being passed my education was finished. It was the duty of everyone with ability to work, and to give some portion of his work to the public good. I might, for example, work out some subject connected with my daily occupations and publish the result in the *Journal*; they would be glad to see me a contributor to its pages.

I did not see Mr. Deane again for ten years, when I met him as a fellow councillor. By that time he had forgotten all about it, no doubt having given similar advice and encouragement to many other students; but I had neither forgotten it nor failed to act upon it. I now echo his sentiments and advise you all to profit by them as I have done. But that is not just the point of my story: I tell it you as an illustration of the falsity of the reports circulated by unsuccessful students about the sulkeness, the hardness and the savageness of the examiners. I tell it you to show how they even went out of their way to confer an honorary distinction which was not asked for, lest the omission

would be unfair to a willing student. I found all with whom I spoke pleasant, gentlemanly, and kind, and though we have not the same men, we have the same spirit in the board still.

Now I will tell you a secret which will help you to pass your examination with pleasure and comfort. Be prepared to give your examiners about 50 per cent. more of good, solid information than you think they have a right to expect, and depend upon it you will find, as I did, that they are all remarkably pleasant gentlemen.

While I earnestly commend diligence and persistence in the prosecution of your studies I must also add this further injunction, that you be not students in pharmacy only. Do not give your whole soul to this one study, for your duties as pharmacists will not be worse performed, but better, for the cultivation of refined tastes and the following of intellectual pursuits. Keep a little corner of your soul free from the bricks and mortar of pharmacy—there the daisies will blossom and your hobby may be turned out to grass.

Three months' training cannot make a sedentary man into an athlete, neither can three months' grinding make a tyro into a philosopher.

The growth of physical power comes by daily work, battle against resistance, alternated with food and rest. By no other means can you develop bone and sinew, muscle and nerve, in a healthy and vigorous condition.

The growth of moral and intellectual power takes place upon precisely similar principles. It is the daily battle with difficulties, little difficulties, the daily learning of little facts, the daily exercise of observation and judgment; it is the daily struggle and the nightly rest that makes the moral and intellectual powers grow strong and healthy.

I have no fear of error in your judgment of what it is desirable you should become in the course of the next ten or twenty years. If I had a power to give you I would give you strength of will. The picture drawn by hope is bright and fair. What is wanted for its realisation is the determination that every day shall record some definite progress, however small.

Learning commences in the cradle, it goes on always and for ever. Going to school and leaving school, passing an examination and entering business, are not to be regarded as aims or ends, but only stages in an endless journey.

The necessity for a compulsory curriculum is a question which has often been debated by leading men in our society: the necessity for it only exists inasmuch as you fail to be a law unto yourselves. Voluntary work is both better and less irksome than that performed under compulsion, but it must be work of that quality with which a taskmaster could find no fault. Be your own taskmasters, and practise upon yourselves that rigorous discipline to which you would like to subject me.

If you would do so we should hear no more of cram, or of students who crowd their efforts into a three months' course of study, and convert their brains into deposits for dry rubbish.

And when you have passed your examination remember you have not done any great thing; do not grow conceited on the strength of so small an achievement. All that passing indicates is that you are not too ignorant, or too stupid, to be entrusted with the practice of your trade. Do not think that, having learned enough to merit this first mark of confidence, you may then rest from active exertion. Rest is only given us to restore our power. Prolonged rest is neither useful nor agreeable. Activity is life, stagnation is death—death such as no Christian should acknowledge. The glory of the Christian faith is going on in all good works, and knowing no end. It is the mark of unworthy aims and narrow views to look forward to an achievement which is an end to work and progress.

Glory of warrior, glory of orator, glory of song,

Paid with a voice flying by, to be lost on an end less sea.

Glory of virtue, to fight, to struggle to right the wrong.

Nay, but she aimed not at glory; no lover of glory she!

Give her the glory of going on and still to be!

The wages of sin is death; if the wages of virtue be dust,

Would she have heart to endure for the life of the worm and the fly?

She desires no isles of the blest, nor quiet seats of the just,

To rest in a golden grove, or bask in a summer sky;

Give her the wages of going on, and not to die!

I have endeavoured to show the importance of the gradual and persistent accumulation of facts and of their consequent assimilation and permanence in effect when thus slowly acquired. But this acquirement of facts is a very poor kind of education

unless it be accompanied by a general development of faculties which raises it to a higher level, far above that parrot-like power of giving certain answers to certain questions. I am perfectly aware that it is not possible to cultivate this or any other branch of education without developing in some degree all the others, but for a satisfactory cultivation of your powers all the faculties of the mind and heart should have full and healthy play. You learn to remember what you read, you must learn to understand it also. You learn to remember the objects you see, you learn to observe accurately, to compare and to classify. You endeavour to remember the phenomena that take place in the operations you perform, and you learn to observe, to compare, to judge. You try to overcome a difficulty or to understand a failure, and you learn to imagine, and to theorise. Not only must your minds have received an ample store of useful facts, but all those faculties must also have received a large development before you can be regarded as in any complete sense well educated and intelligent men.

To make a carpenter you want wood and tools, and skill to use them. So to make a learned man you should have knowledge of facts and laws, and power to use them.

Probably many of you are not aware how imperfectly you exercise these faculties upon facts or circumstances which are presented to you. I will take an illustration. Suppose I write down in a vertical column the series of units 0, 1, 2, 3, &c., up to 9.

[This was done on the black board, and then a second column in the reverse order, thus:—

0	9
1	8
2	7
3	6
4	5
5	4
6	3
7	2
8	1
9	0

Mr. Proctor then proceeded to point out some of the features which an observant student might observe in respect to these figures.]

Some would be noticed by all of you if you regarded the figures long enough, but you would not all observe them equally soon; it would depend upon the innate faculty and the degree of educational development of the individual. The first thing you would notice is that the double column represents the nine column in the multiplication table; next you might notice that if we place a plus mark (+) between these two columns, and an equal mark after them, we should obtain a third column all nines, thus:— $0 + 9 = 9$, and the same with all the others down to $9 + 0 = 9$. Next, if you draw diagonal lines from the 0 to the 8, and from the 9 to the 1, and so on, you will see that the products are all eights one way and all tens the other. In making these observations we should not say you had discovered a law, though we might say you had detected a rule applying to the arrangement, and you would naturally say, "Where there's a rule there's a reason." And in the search for the reason you exercise the higher faculties of the mind. You do not continue your observations upon these figures alone; you commence considering, speculating, and testing speculation with experiment. You may extend the column upwards and downwards and find nine times nine tenths is 8.1, and nine times eight tenths is 7.2. So the remainder, the sum of the two figures continues to be nine. You may then carry your extension downwards, and find nine times eleven are ninety-nine, the sum of which two figures is not nine but eighteen. Then nine times twelve equal 108, in which case the sum of the three numbers gives us nine, as also is the case with the following numbers, 117 and 126, &c. You will observe the hitch at eleven times nine in the sum taken horizontally, and that there is no hitch in the sums taken by the right-hand diagonal, and three hitches in the left-hand diagonal. This will lead you to observe that in stepping from decimals into units the rate of progression is altered, and that it is not altered in passing from units to tens, because we take in the teens between ten and twenty. It is not my object to teach you arithmetic, or to explain the law which governs these phenomena, but I would just suggest for anyone curious in figures to note that nine is the highest number in units, and that comparable phenomena may be observed if he takes eleven as the highest number of pence, not a shilling. The products in the eleven column expressed in shillings and pence give eleven as the number of coins. Seven being the largest number of pints, not a gallon, the seven column expressed in gallons and pints gives

seven as the sum of the measures, &c. How much more interesting arithmetic becomes when the reason for a rule is found. How much more interesting and useful every branch of science becomes when it is followed with intelligence instead of being learned merely by memory.

The 11 Column in Pence	In Pence and Shillings	In No. of Coins
11 0 „ 11 11		
22 1 „ 10 11		
33 2 „ 9 11		
44 3 „ 8 11		
55 4 „ 7 11		
66 5 „ 6 11		
77 6 „ 5 11		
88 7 „ 4 11		
99 8 „ 3 11		
110 9 „ 2 11		
121 10 „ 1 11		
132 11 „ 0 11		
143 11 „ 11 22		
154 12 „ 10 22		
165 13 „ 9 22		

The 7 Column in Pints	In Pints and Gallons	No. of Measures
7 0 „ 7 7		
14 1 „ 6 7		
21 2 „ 5 7		
28 3 „ 4 7		
35 4 „ 3 7		
42 5 „ 2 7		
49 6 „ 1 7		
56 7 „ 0 7		
63 7 „ 7 14		
70 8 „ 6 14		
77 9 „ 5 14		

In all cases when you have numerous scattered facts, endeavour to arrange them in order, and to find the law of their relation.

I regard it as one of the weak points of the pharmaceutical examinations, as at present constituted, that though they inquire into the student's knowledge of facts and power of memory, they do not sufficiently test his power of thought, judgment, and originality. I trust the day is not far distant when a change will be made in this respect.

All of you to whom I am now speaking are destined to be Square men: let me urge upon you the importance of being both able and willing to fill a round hole, or any kind of a hole in which fortune may place you.

The use of the laboratory and the guidance of professors are your great privileges. Such aids often make a little man stand fairly well, and enable a man of good abilities to distinguish himself, but they alone never make a great man, and they even risk the dwarfing of great characteristics by bending habits of thought into the established forms. This is a word of encouragement to many who may read my words, but who like myself have to do the best they can without the advantages you enjoy. The dwellers in little country towns often have the advantage of shorter hours and of more leisure behind the counter, and if they have the wisdom to make good use of these, and their opportunity of gathering a few indigenous herbs, they stand a good chance of developing individual characteristics, which is a great boon in a world of common-place men; and at a time when individuality is scarce, and every day becoming a scarcer commodity. Comparative ignorance and inexperience in the case of the home student, and slavish conformity to custom and to a regulation pattern on the part of the collegian, are the dangers of the two positions to be avoided if possible. It may not be in the power of many in the country to choose between their circumstances and yours; but to both I would offer a piece of good advice, in the words of somebody who says, "Of two evils choose neither." Do not neglect cultivation, but do not let cultivation convert you into a locomotive engine, which can run only on the line upon which it is placed.

Your studies will cost you something, so will your pleasures. If the cost of study be burdensome, take care that the cost of pleasure be the less. Do without expensive pleasures, whether the expenditure is much money, much time, or much energy. Cultivate those pleasures which leave you better able for duty, shun these which leave a bad after taste. There is one cheap pleasure I would commend to you all—I mean the habit of cheerfulness and of making the best of the unpleasant duties which are sure to fall to your lot. We often hear complaints—

sometimes a chorus of complaints—about the hard fate of the pharmacists—how hard it is that they should be learned and poor. Now let me caution you; the learning did not make them poor unless they learned to be idle, to be above drudgery, to be negligent of common duties; but these are things you ought not to learn in any school, or you will have to unlearn them in the school of adversity. Instead of thinking how hard it is to be poor and learned, think how much harder it would be to be poor and ignorant, as the bulk of pharmacists were fifty years ago.

Much has been said about our professional status. We have repeatedly seen it suggested by writers in the journals that we should rise above our trading character; and we have seen communications from young men apparently not yet come to years of discretion, asking if the wearing of an apron were not degrading to gentlemen of their professional status.

I had almost resolved to say nothing on a subject so little worthy of our attention; but I must just give it a word in passing to express my contempt for men who, having entered the business, are ashamed to take upon themselves some of the duties of their position. I care not to address such superfine gentlemen, any more than Hotspur cared to discourse with the perfumed popinjay who said that he, too, would have been a soldier were it not for the villanous saltpetre and the vile guns. If you would prosper in the battle of life be a Hotspur rather than a kid-gloved courtier. You should be so full of work, and of desire to do what is right and to be what is right, as to leave neither leisure nor inclination to trouble yourselves about such petty matters further than to acknowledge once for all their fitness and the fitness of conformity to discipline. Such dainty dislike to rough work springs from idleness, for there is nothing truer than that Satan provides mischief for idle hands.

As you would exclude the evil one keep your hands full of honest work, your heads full of useful knowledge, and your hearts full of pure affections.

Pure motives and earnest work give dignity to every duty. As regards the mere name (trade or profession), true worth is satisfied with any title conveniently descriptive.

Your business will include some things which you may feel to be drudgery, but should not include anything really derogatory. The drudgery will be much lightened by your culture enabling your minds to be occupied with thoughts which are pleasant, pure, refined, and elevating, while your hands are occupied with the so-called menial work of making the shop clean and orderly.

My subject has grown in treatment more lengthy than I intended, but I trust it has not grown dreary or unprofitable.

I have endeavoured to enforce the importance of beginning, at once and in earnest, that course of moral and intellectual development which is one perpetual achievement, but knows no end. I have listened to the teaching of the generation which has gone to the front, and I have endeavoured to reflect upon you an echo which has not lost vitality in its passage. I look to you in the future to roll on this echo to another generation—not like the echoes of the physical world, which grow fainter and fainter as they pass from hill to hill, but strengthened by your earnest and your honest work, by your love of truth and your zeal for progress.

Thus shall—

Our echoes roll, from soul to soul,
And grow for ever and for ever.

SOUTH LONDON SCHOOL OF PHARMACY.

OPENING OF THE SESSION.

THE winter's work at this institution was commenced on October 16, with a short ceremony, the whole lasting somewhat less than an hour. Some 60 or 70 students were in their places in the laboratory, and a few visitors attended by invitation.

The Rev. G. Hearson occupied the chair, and briefly opened the proceedings.

Mr. Baxter (secretary) said he would preface his annual statement with a few remarks. It might be a source of gratification for them to know that on the books of the institution there were 100 students, 80 of whom had entered during the present term. He would not trouble them by referring in detail to statements

of the unequalled success of that institution, which had gone through the length and breadth of the land, as well as the colonies. Twelve hundred tongues who had studied successfully since its commencement could testify to its extraordinary success. It was not so much to be wondered at, however, seeing that the educational department was unequalled. There were no lectures more cleverly delivered in pharmacy and materia medica, and the demonstrators and assistants in pharmacy and chemistry were all alike painstaking, from the pupil teacher to his chief. But the student required something more than teachers, and he would earnestly impress upon their minds that unless the students supplemented the assistance given to them by a good spirit they would fail in their attempt, just the same as they would in any other sphere of life. He said the school was nearly quite full for the whole session, and at certain periods intending students had to wait for vacancies. The degree of success obtained by the students at their various examinations was as follows:—Passed, 138; failed, 25—making the number 163. Several students took both Minor and Major qualifications during the session, while, on the other hand, some did not work for any special examination. Mr. Baxter, in conclusion, said: "The good ship, South London, has made, as you have heard, a successful voyage last session. She has been in dock since July last, and placed in the hands of a careful ship's husband. She has been stripped and overhauled from keel to gunnel. Her rigging has been carefully looked to, and made taut below and aloft, and, consequently, she has been classed A 1 at Lloyd's for a year longer. She is insured in the underwriter's office at Kennington. Every bale of goods has been secured, and delivered to the owners in Bloomsbury Square—and I will ask you, as the good ship is about sailing, to give one ringing cheer for their captain, Dr. Muter."

Mr. Joseph Ince then addressed the students, observing that to him it was delightful to meet together so many young men ready to run their course. No one could be more opposed to the formation of the school than he was at one time; but when he found that not only was chemistry well taught, but also the practical branches of materia medica and pharmacy, he altered his opinion. He therefore congratulated them as well as himself on being present on that occasion. He did not think he need enlarge upon the necessity for attention to their studies, because he felt they knew that was necessary to success. But he would just advert to the danger in some public schools of burning the candle at both ends. Too much study often ruined the health, and he warned them against that; and, again, he would, on the other hand, caution them not so to act as that the candle might gutter and have a winding sheet. The first thing they would have to do would be to set to work at their different studies with energy, so that they might use up with advantage the small amount of time allotted to them. To imagine they could pursue the science of chemistry in the abstract without any regard to the circumstances attending such a study was a thing impossible. The moment they emerged into technical studies they must do so under certain conditions, and the first was to render themselves efficient when the time came that their progress would be submitted to the test. He hoped, then, they would be properly prepared at the examination, and show good proof of what they had done in that institution. He hoped, however, they would even go higher than that. He made those remarks in confidence, because his connection with the institution had shown him that the students not only strove to pass the examinations well, but were equally devoted to the pursuit of honour. Last session the students did exceedingly well in competition for school prizes. He should like in good time to see some amongst them writing a scientific paper of high excellence: taking a seat upon the Council, or sufficiently distinguished to be on the Board of Examiners itself. As to the practical working of the institution, he might state that the very students who had been most successful in their trade aspects had been successful in their preliminary studies.

The chairman urged the students to get to know, if possible, a little more than Dr. Muter did. If they knew all Dr. Muter knew, and added a little more to that, so much the better for themselves, as well as society. Dr. Muter desired they should get all out of him they could. He earnestly hoped the students would be diligent, and shine in the world; that they would be earnest in the cause of humanity, and rise to eminence in their several positions in life.

Immediately on the conclusion of the chairman's remarks Dr. Muter took his seat, and the work of the session commenced.

MEDICAL CLEANINGS.

It is becoming usual, both in the medical and general press, to sneer at the fashion of opening the educational session by introductory lectures. Guy's and Bartholomew's hospitals have discontinued the system, and they have been glorified accordingly. Certainly it is difficult to avoid monotony in such addresses; but that complaint hardly holds good unless it be the fact that the lecturers discourse, not for the benefit of the new batch of recruits which each year brings forth, but for the sake of impressing the critics themselves. In this matter, as in most others, the man usually succeeds the best who disregards the critics altogether and applies himself simply and conscientiously to the task which has been assigned to him. It would be wearisome if we attempted to give an analysis of all the addresses, but it may not prove uninteresting if we make a selection of a few good sentences from them as we glance them through.

At University College, Professor Maudsley discoursed mainly on the scientific training of a physician. As a moral essay his lecture was excellent. According to him fees must never be the object of a doctor. Worldly distinction and riches are far more easily gained on the Stock Exchange, or in commerce, than in the medical profession, while a peerage is the reward for destroying, not for saving, life. But Dr. Maudsley and his immaculate youths are not eager for peerages, riches, or worldly distinction. They prefer "the simple intrinsic nobility" of their vocation to "the outworn decorations of a childish stage of progress":—

"If medical practice be pursued as a mere means of money getting, assuredly it causes the deepest demoralisation of him who so uses it, as best things turned to basest ends breed the greatest corruption. He who deliberately applies himself to take the utmost advantage of the suffering and the feebleness of humanity, coming to him for aid in its anguish and its utter helplessness, in order to make his profit—and we may hope there are not many creatures of that vileness in the profession—may have large success in his low aim, but he discovers a meanness and a degradation of nature which are a grievous shame to his kind, and which devils might almost disdain."

Dr. Mitchell Bruce, at Charing Cross, began by stating that 20 per cent. of the men who were registered as medical students were never registered as medical practitioners. Allowing for such circumstances as death, change of position, and so forth, the lecturer considered a large proportion of the failures was due to inefficient study. Drilled by the demonstrator in the day, and crammed by a tutor in the evening, the miserable student "loses his head" when alone with his examiner, though in truth he never had one of his own. He should follow an independent line of work; use his own eyes and his own head; and not ask the demonstrator to do more than direct him. He should start with the determination not to be crammed; not to be mentally wet-nursed, as if his own mother-reason had forsaken him. What was wanted in the profession were thoughtful men; and thinking capacity, rather than amount of information, should be tested at the pass examination.

Dr. Blandford, at St. George's, with doubtful wisdom, chose insanity as his theme.

Dr. Andrew Clark, at the London Hospital, gave a good address, in which he set forth the position of medicine in its relations to other sciences and to the public. "Throughout the whole realm of nature," he said, "medicine lays down its lines of inquiry, and establishes its channels of communication. It is the metropolis of the world of knowledge, and we are the privileged denizens thereof. Here we are brought face to face with the mysteries of nature, of life, of man, and of the Eternal which enfolds them. Here, in the light collected from every lamp of science and converged into a focus upon them, we may discuss the loftiest problems which can engage the mind of man. And here, in the seeking after truth and in the doing of good, we may open for ourselves sources of interest and of happiness greater and more enduring than any other that the world can supply."

At St. Mary's Dr. Wiltshire usefully insisted on the permanent duty of a physician being the prevention rather than the cure of disease. Great triumphs, he believed, awaited the profession in the region of sanitary science.

Dr. G. H. Evans, at the Middlesex Hospital, compared the career of the medical student to that of a traveller along a road,

straight at first, and easily followed, provided along its course with establishments where travellers would be furnished with merchandise of various kinds, and with instructions how best to dispose of it. This portion of the road ended in turnstiles, where tolls had to be paid, which gave admission to an open country with roads more or less plainly indicated, leading in various directions, from which roads the traveller might choose that which seemed most likely to lead him to a good market for his wares.

Mr. Francis Mason, at St. Thomas's, mentioned the circumstance that he was the only surgeon who had been chosen this year to deliver an introductory address. This lecturer reminded his hearers that the way to success as a student and practitioner was only through work. The statesman, the artist, the actor, the orator, have all won their conquests after incessant labour and unflinching perseverance. After all, too, great wealth and high honours were only gained by the few, but the speaker expressed his own honest opinion that there was no calling in which a fair competence is so speedily acquired as in the medical profession.

LIVERPOOL CHEMISTS' ASSOCIATION.

THE annual meeting was held at the Royal Institution, September 28, 1876, the president, Mr. Alfred H. Mason, F.C.S., in the chair.

After the confirmation of the minutes of the previous meeting, the hon. sec., Mr. Thomas Williams, F.C.S., read the report of the council for the past (27th) session, as follows:—

In reviewing the proceedings of the twenty-seventh session of the Liverpool Chemists' Association, your council have to congratulate the members upon its steady progress. The great impetus which has been given of late years to scientific inquiry has evidently extended itself to the business of the meetings, and the session has been marked by increased activity and a larger attendance.

During the past session one honorary member, W. Carter, Esq., M.B., B.Sc., LL.B., M.R.C.P. Lond., 17 ordinary members, and one associate, have been elected.

Your council regret that death has removed one of our most esteemed honorary members. Dr. Inman. In the early history of the association Dr. Inman was one of its most prominent workers. His assistance as lecturer on materia medica, and the papers he contributed, helped very materially to establish the high standing your association maintains. Your council desire also to pay tribute to the memory of one of the founders of the association who has been called away, and who was president during the first two sessions of its existence. The unostentatious liberality and practical business ability of the late Mr. Robert Clay were of great assistance in the formation of your association.

The chemistry classes in connection with the School of Pharmacy have been conducted by Mr. Thomas Williams, F.C.S., and your council have pleasure to announce that the number of students has been above the average of recent sessions. An examination was conducted by Mr. Abraham, and the association is indebted to Professor Attfield for sending an examination paper and awarding the prize offered by your council to the competitor who should gain the highest number of marks. Mr. W. H. Edwards was the successful candidate, and he has since passed the Minor examination of the Pharmaceutical Society.

By permission of the committee of the Liverpool Royal Infirmary School of Medicine, students of the Liverpool School of Pharmacy have been admitted to the lectures on botany conducted by Dr. Carter, and the lectures on materia medica conducted by Dr. Nevins. Your council trust that as these classes will be continued during the coming session, and a complete course of study provided, the next session of the Liverpool School of Pharmacy will be well supported by the students of pharmacy in this town.

The papers read at the meetings and the published proceedings of your association have attracted more than usual interest, and much information has been elicited during the discussions which followed. Miscellaneous contributions, which have always formed an attractive feature of the proceedings, have been numerous and valuable, some original. Your council are indebted to those gentlemen who are members of the association for their help, and they desire also to acknowledge the assist-

ance of Mr. Charles T. Kingzett, F.C.S., and Mr. T. A. Readwin, F.G.S., &c., in bringing about this success.

The question box has been used more frequently during the session, and your council invite the younger members to make use of this means of obtaining the solution of any difficulties they may meet with in their studies.

Your museum has been enriched during the past session by a handsome contribution of specimens of rare chemicals from Messrs. T. Morson & Son, of London; by a valuable collection of opium alkaloids and their derivatives from the president, and several novelties from the discoverers or proprietors. The librarian reports that 230 books have been taken out during the session, and your council are glad to learn that the library is of great service to members, who make constant use of it for reference.

That your twelfth conversazione provided a very enjoyable evening was the testimony of all who were present, and your council are indebted to several scientific friends who contributed to render it such a success. Professor Barrett's popular lecture on "Geysers and Glaciers," as exhibiting certain physical properties of water, was very successful. The experiments used in illustrating his subject were skilfully carried out, and well merited the frequent applause which they received. Through the liberality of several members of your council a guarantee fund was raised, which has caused a small balance to be placed to the credit of your association, otherwise the conversazione would have caused a serious deficiency.

Your council were invited to send delegates to the meeting of the British Pharmaceutical Conference held at Glasgow. The president and Mr. Shaw attended as a deputation from your association, and whilst you were comparatively well represented by other members, your council hope that the interesting nature of these meetings, and the hearty welcome with which members are received, will stimulate others to take part in the future proceedings of the Conference.

It was decided at the first meeting of the session that the chair should be taken at 8 o'clock, instead of 8.30, as heretofore. The increased average attendance leads to the conclusion that such a change was desirable, and is satisfactory.

The suggestion that it may be desirable to alter the title of the association has received the consideration of your council, but they feel that it is a question to be decided by the members, and therefore leave it for further discussion.

At the concluding general meeting the new rule relating to the election of president came into operation, and your council were gratified to find that by the re-election of Mr. A. H. Mason, F.C.S., &c., the members ratified their action in calling him to the chair.

The following members of council retire by rotation:—Messrs. Armstrong, Davies, Murphy, and Williams.

Your treasurer will present a report of the finances of the association, which shows a credit balance of 3*l.* 11*s.* 1*d.*

* *

The honorary treasurer, Mr. R. Sumner, read the following financial statement:—

THE LIVERPOOL CHEMISTS' ASSOCIATION IN ACCOUNT WITH
ROBERT SUMNER, HON. TREASURER.

<i>Dr.</i>								
						£	s.	d.
To Balance the Treasurer	..	..	..	..	..	5	3	1
" Insurance	..	..	..	..	..	1	0	0
" Tea, Coffee, &c.	..	..	..	..	..	7	12	10
" Attendance	..	..	..	..	..	1	15	0
" Printing	..	..	..	..	..	12	17	11
" Stationery and Periodicals	..	..	..	..	..	7	4	5
" Delivering Circulars	..	..	..	..	..	1	8	0
" Rent	..	..	..	..	..	10	10	0
" Librarian	..	..	..	..	..	4	0	0
" Collector's Commission	..	..	..	..	..	1	16	3
" Sundry Expenses	..	..	..	..	..	1	13	0
" Prize to Students	..	..	..	..	..	1	1	0
" Balance in hand	..	..	..	..	..	3	11	1
						59	12	7
<i>Cr.</i>								
						£	s.	d.
By Cash, Members' Subscriptions	..	..	..	..	..	56	2	0
" " 8 Associates	..	..	..	..	..	2	0	0
" " Microscope Fees and Library Fines	..	..	..	..	..	0	9	11
" " for Breakage in Museum	..	..	..	..	..	0	4	9
" " Balance from Conversazione	..	..	..	..	..	0	15	11
						59	12	7

September 28, 1876. Audited and found correct,
JOSEPH WOODCOCK, } Auditors.
T. FELL ABRAHAM. }

The president moved "That the report as read be adopted, and, together with the list of members and abstract of proceedings of the past session, be printed and circulated among the members." He reviewed the various paragraphs in the report and impressed upon the members the importance of doing their utmost to maintain the position of the association, inviting the students to use all diligence to render the session of the School of Pharmacy successful. He congratulated the members upon the success of the past session, and upon the satisfactory change in the condition of finances of the association. Mr. W. H. Edwards seconded the motion, which was carried unanimously.

The meeting then proceeded to the election of four members of council. Messrs. E. Davies, F.C.S., Thos. Williams, F.C.S., J. T. Armstrong, F.C.S., and Martin Murphy, F.C.S., were duly elected.

Mr. J. Woodcock moved "That the best thanks of the meeting be given to the donors to the library and museum, and to the authors of papers during the past session."

Mr. E. Davies, F.C.S., seconded the motion, which was carried unanimously.

Mr. Haddock moved "That the best thanks of this meeting be given to the officers and council for their services during the past session."

Mr. E. F. Morton seconded the motion, which was carried by acclamation.

The president, treasurer, and secretary, returned thanks.

The president then presented to Mr. W. H. Edwards the council's prize for "chemistry." It consisted of a handsomely rebound copy of Hanbury and Flückiger's "Pharmacographia." This concluded the business of the session.

The twenty-eighth session was inaugurated on Thursday evening, the 12th inst., when the President, Mr. Alfred H. Mason, F.C.S., delivered an opening address.

PHARMACEUTICAL SOCIETY OF IRELAND.

At the recent examination of the Pharmaceutical Society of Ireland 100 candidates were examined: 55 were rejected, the following 45 passed:—

Edward Best	James Kiloh
John Bethune	Robert Louis M'Adam
John Henry Boardman	Thomas James M'Adam
John George Boileau	Andrew M'Connell
David Boyd	Thomas M'Cullagh
Rodolph A. Colston Burnes	William Cooper Newbold
George Clarke	Isaac Waugh Nicholl
Samuel Curham	Michael Patrick O'Ryan
John Charles Thomas Day	Arthur Henry Pring
John Marischal Diack	Arthur Reynor
William Cochrane Dobbin	Robert Rowney
Alexander Elliott Doran	Thomas T. Seymour
George Ferguson	William Shields
John James Gamble	Thomas Smyly
John Gilbert	G. H. Staunton
William Green	Edward Stephens
Edward Francis Hanrahan	Alexander Thomson
James Hartford	David Hennessy Tweedie
James Haslett	John Watters
Henry Johnston	Charles Francis Weir
Robert Alexander Jones	James Wells
John Jozé	J. Godolphin Paille Whitford
Patrick Ambrose Keogh	

The annual meeting took place on Monday, October 2. The following members of council retired according to the rotation list:—Dr. Aquilla Smith, vice-president; Mr. W. Goulding, M.P., Cork; Mr. J. T. Holmes, the Right Hon. the Lord Mayor, Dr. Frazer, Dublin; Dr. Bourke, Limerick; and Dr. Whitaker, Belfast. The following was the result of the election:—

	Votes
Dr. Aquilla Smith	30
Mr. J. T. Holmes	30
Dr. Frazer	29
Dr. Whitaker	28
The Right Hon. the Lord Mayor (Dr. Owens)	27
Mr. W. Goulding, M.P.	22
Dr. Bourke	19
Mr. Payne	14
Mr. Draper	1
Mr. Hoffe	1

According to our information, Dr. Bourke had intimated previously to the meeting that he would not seek re-election. Mr. Payne, of Belfast, therefore takes his place. This is the only change in the council.

At this month's council meeting it was resolved that the council should take steps to obtain power to license druggists to sell poisons in Ireland, but not to dispense medicines.



MILK OF SULPHUR IN IRELAND.

At the Belfast Police Court, on October 5, before Mr. Edward Orme, R.M., and Mr. S. M'Causland, J.P., James Hogg, 209 York Street, was summoned for having, on the 19th ult., sold to complainant a certain drug, to wit, precipitate of sulphur, same being mixed with an ingredient so as to injuriously affect the quality of said drug.

Mr. M'Lean, jun., prosecuted, and Mr. Harper appeared for the defendant.

Mr. M'Lean, in stating the case, said this was a novel prosecution. It was brought under the Sale of Food and Drugs Act, 38 and 39 Vic., cap. 63, secs. 7 and 8. He might state that these prosecutions were brought under the advice of Professor Hodges, the borough analyst. The matter was brought under his notice, and he considered it of so much public importance as to order an investigation at the earliest possible moment. The sections he had alluded to were as follows:—"No person shall sell any compounded article of food or compounded drug which is not composed of ingredients in accordance with the demand of the purchaser, under a penalty not exceeding 20l. . . . Provided that no person shall be guilty of any such offence as aforesaid in respect of the sale of an article of food or drug mixed with any matter or ingredient not injurious to health, and not intended fraudulently to increase its bulk, weight, or measure, or conceal its inferior quality, if at the time of delivering such article or drug he shall supply to the person receiving the same a notice, by a label distinctly and legibly written or printed on or with the article or drug, to the effect that the same is mixed." He would prove that the article sold out of Mr. Hogg's establishment was not precipitate of sulphur, but an adulterated article. Steed, the provision inspector, went to the establishment of the defendant and asked for precipitate of sulphur. Instead of receiving this he got a mixture of sulphur and lime. Dr. Hodges' analysis showed that 100 parts of the drug contained—pure sulphur, 50 parts; sulphate of lime, 50 parts. In short, the drug was adulterated by half of the mixture being lime. This was sold to the people as a medicine, but in reality the half of what they were taking into their system was plaster of Paris. Such an ingredient must of necessity be injurious to health. Dr. Hodges considered it so, and in consequence these prosecutions had been instituted.

Mr. Harper said their case was that they had sold the purest of the pure, so far as the article was concerned that was asked for and supplied, and they challenged anyone to prove the contrary.

Mr. Orme: Does not Dr. Hodges say it is adulterated?

Mr. Harper: We sold the article which was asked for and paid for.

Mr. M'Lean: You sold a substance which was half sulphur and half plaster of Paris.

Robert Steed was examined, and said he was one of the inspectors of provisions for the borough of Belfast. On Tuesday, the 19th ult., he went into the defendant's establishment and asked for three ounces of precipitate of sulphur. He got what was represented to be this, and paid for it the sum of 3d. He divided it into three parts, in accordance with the

Act. The analysis of one of the parts by Dr. Hodges had been stated by Mr. M'Lean.

Cross-examined by Mr. Harper: When I went into the shop I asked for precipitate of sulphur. I did not mention what particular ingredients the compound was to contain. The assistant said that what I asked for had two names—that it was also known as milk of sulphur. I have heard of milk of sulphur before. What he gave me, he said, was milk of sulphur, and said it also went by the name of precipitate of sulphur. I have no opinion as to whether or not there should be lime in milk of sulphur or precipitate of sulphur.

Mr. Harper said that the case must fail on several grounds. In the first place, the 7th section never contemplated a case of this kind. This section referred to a compounded drug; but the summons here was not for a compounded article, but for an article that had not been sold in its purity. Sections 4 and 5 of the Act had reference to compounded drugs:—"No person shall, except for the purpose of compounding, as hereinafter described, mix, colour, stain, or powder, or order or permit any other person to mix, colour, stain, or powder, any drug with any ingredient or material so as to affect injuriously the quality or potency of such drug, with intent that the same may be sold in that state; and no person shall sell any such drug so mixed, coloured, stained, or powdered, under the same penalty in each case respectively as in the preceding section for a first or subsequent offence. . . . Provided that no person shall be liable to be convicted under either of the two last foregoing sections of this Act in respect of the sale of any article of food, or of any drug, if he shows to the satisfaction of the justice of the court before whom he is charged that he did not know of the article of food or drug sold by him being so mixed, coloured, stained, or powdered, as in either of those sections mentioned, and that he could not with reasonable diligence have obtained that knowledge." On several grounds, as he had stated, this case must be dismissed. The first he had disposed of—that the prosecution did not come within the section under which it had been framed; the second was that the ingredient sold was what had been asked for, and what was known as milk of sulphur; and the third was raised on the sections he had just quoted—that the defendant sold the drug in the state in which he himself had purchased it, that he did not know of it being adulterated, and could not with reasonable diligence have obtained that knowledge. After further arguments by Mr. Harper,

Mr. Orme said this would be a nice case for a jury of apothecaries and chemists to sit on.

Mr. Harper did not want the case decided by any technicality whatever, but on the plain, broad ground that the man paid for what was sold to him, and that he received full value for his money. He was told distinctly that the article he received was milk of sulphur, and according to the receipt of the British Pharmacopœia, which he held in his hand, one of the ingredients in milk of sulphur was lime. The man only paid 3d. for three ounces of this milk of sulphur; whereas if he had been purchasing pure sulphur he would have paid ten times this amount.

Mr. Orme confessed his ignorance of a case like this, where chemical skill was required. His best plan would be to put on a heavy fine, and let it go by way of approval before Mr. Otway. Mr. Otway, however, might then say he was just as ignorant on the subject as he (Mr. Orme).

Mr. Harper said this might be, but Mr. Otway, if he did not understand the question of drugs, would at any rate understand the law and how to decide as to sections of an Act of Parliament. Putting all other matters out of the question, he contended that, on the law of the case, he was entitled to a dismissal. In accordance with the 25th section of the Act, he had given notice to the prosecution that, on the part of the defendant, he would rely on the defence that at the time when the article or drug was sold it was sold in the same state as when the defendant purchased it, and that therefore he should be discharged from the prosecution. What was sold was milk of sulphur, properly so called, and without the slightest particle of adulteration.

Francis Jacob was examined, and said he was in the employment of Mr. Hogg, who was a family grocer and druggist, in York Street. He remembered the complainant being in his master's establishment and asking for precipitate of sulphur. He told him that what they sold was milk of sulphur, but that it was known as precipitate. What witness sold him was milk of sulphur. It was sold in the same form as Mr. Hogg had purchased it from an extensive firm in town.

Cross-examined by Mr. M'Lean: I believe Mr. Hogg purchased this milk of sulphur from Mr. Gibson, druggist, Mill Street. We sell plaster of Paris for cement purposes. I swear this milk of sulphur is sold as we get it.

Mr. Orme believed that sulphur was used as a medicine.

Mr. M'Lean said it was, and two or three pounds of plaster of Paris would be a nice dose for a person to take into his system.

Mr. Orme: He would require a stucco man to get it out of him. It would be enough to bung him up. I think I will have to adjourn this case, as I am not in a position to decide it to-day.

Mr. M'Lean said it was a matter that greatly affected the public.

Mr. Orme believed it was. He considered nothing was more dangerous than a person taking a dose of plaster of Paris.

Mr. Harper: Indisputably, lime is one of the ingredients of milk of sulphur.

In answer to Mr. M'Lean, the witness admitted that on the label on the packages he gave the complainant were the words "precipitate of sulphur," but the ingredient was not described as pure.

Mr. M'Lean said that if the drug was sold as mixed the fact that it was a mixture should be on the label.

Mr. Hogg having been examined as to the fact that he sold the drug as he purchased it,

Mr. Orme said that on the case, as presented to him, his best plan would be to dismiss it without prejudice.

* *

Second Case.

Samuel Gibson, 33 and 35 Mill Street, was summoned for a like offence on the 13th ult.

The same professional gentlemen appeared on each side.

When the case was called on,

Mr. Orme said if the facts were the same he would follow the same ruling.

Mr. Harper said there was an important difference, as his Worship would be made aware of.

Mr. M'Lean said that Dr. Hodges had certified that the analysis of what was purchased in the defendant's establishment as precipitate of sulphur was as follows:—100 parts contained—pure sulphur, 60; sulphate of lime, 40.

Steed was examined as to the purchase in the defendant's establishment. He asked for precipitate of sulphur. What was sold to him was marked on the label "milk of sulphur."

Mr. Harper said that the prosecution could not sustain this case. The article sold was really what it was represented by the label—milk of sulphur.

The case was dismissed without prejudice.

* *

Third Case.

William Morrow, 20 and 24 Peter's Hill, was summoned for a like offence on the 12th ult.

Dr. Hodges' analysis in this case was as follows:—In 100 parts—pure sulphur, 55.50; sulphate of lime, 44.50.

As the facts were similar to those in the last case, a like ruling was made.

LONDON BANKRUPTCY COURT.

(BY OUR SPECIAL CORRESPONDENT.)

HENRY TURNER, Homœopathic Chemist and Publisher, 77 Fleet Street.

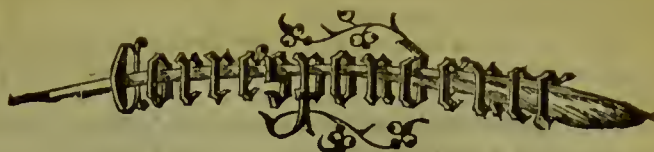
THIS case was noticed in our last issue. The debtor, carrying on business as Henry Turner & Co., had filed a petition for liquidation, and at an adjourned meeting of his creditors, held on September 21, it was resolved to liquidate by arrangement, with Mr. W. C. Copper, accountant, 20 King's Arms Yard, as trustee; and a committee of inspection, consisting of Mr. T. Lynch, 171 Aldersgate Street; Mr. R. Sonnenenthal, of 34 Alder-

manbury; and Mr. W. Roberts, of 10 Adam Street, Adelphi. A statement of affairs was rendered, of which the following is an outline:—Creditors unsecured, 4,754*l.* 13*s.* 11*d.*; ditto secured, 2,548*l.* 17*s.* 10*d.*; and partly secured, 378*l.*; amount claimed by creditor under bill of sale, 1,442*l.* 10*s.*; and creditors to be paid in full, 131*l.* 19*s.* 5*d.*; total unsecured debts, 6,425*l.* 3*s.* 11*d.* Assets—stock, estimated at cost, and which had been taken possession of under bill of sale, 6,000*l.*; book debts, (good), 1,999*l.* 5*s.* 3*d.*; ditto, doubtful, estimated to realise 200*l.*; cash in hand, 2*l.* 18*s.* 5*d.*; bills of exchange, 149*l.* 6*s.* 3*d.*; making the total assets, after deducting 149*l.* 6*s.* 3*d.* for payments in full, 8,219*l.* 10*s.* 6*d.*, thus showing a considerable surplus, subject to realisation. On the 3rd inst. Mr. C. F. Knox applied to Mr. Registrar Brougham for registration of the resolutions, and His Honour made the desired order. The following is a list of the principal unsecured creditors:—

	£	s.	d.
J. E. Adlard, 22½ Bartholomew Close	226	16	7
Bullock & Reynolds, 3 Hanover Street, W. ..	10	0	0
H. H. & S. Bndgett & Co., Monument Yard ..	24	10	7
A. Bishop, Speck's Fields, Mile End New Town ..	112	13	9
Boerick & Tafel, New York	178	0	0
Bone & Son, 76 Fleet Street	48	11	0
E. Bentley, 9 Windmill Street, Finsbury ..	22	1	9
T. Burbidge, Surrey House Penge	12	5	8
Barker & Son, Hall Bank, Manchester	50	17	6
J. Byard, 288 Lancaster Road, Notting Hill ..	44	12	7
Benbow & Son, 12 Little Britain	18	17	8
Countts & Son, 34 Mecklenburgh Square ..	25	14	9
S. Cresswell & Co., 32 Red Lion Square ..	13	14	6
Crown Perfumery Company, 40 Strand ..	55	13	11
H. B. Condy, Battersea Square	14	6	6
B. Cook, Salisbury Court, Fleet Street ..	131	12	6
A. C. Clifton, Arlington Street, Northampton ..	97	15	8
Davy & Son, Gilbert Street, Oxford Street ..	1,240	16	9
Elliman, Sons & Co., Slough	34	11	2
F. Evans, 1 Charles Street, Bethnal Green ..	21	2	10
Evaus, Lescher & Co., Bartholomew Close ..	21	4	0
J. P. Ford & Co., Oxford Street, Manchester ..	18	3	5
Fullwood & Co., Beveden Street, Hoxton ..	33	3	0
J. S. Fry & Sons, 252 City Road	13	4	8
T. Fevre, Rue St. Honoré, Paris	37	3	0
— Farthing, 1 Bloomsbury Court, Holborn ..	11	8	10
E. Gerant & Co., Corporation Buildings, Farringdon Road ..	30	12	0
E. T. Gething, 32 Whitefriars Street, Fleet Street ..	20	12	11
Grootes & Co., Westman, near Amsterdam ..	13	3	6
H. C. Gallup, 493 Oxford Street	21	12	0
Galbraith, Grant & Co., Whitecross Street ..	10	13	0
T. & W. Henry, Lower Mosely Street, Manchester ..	27	0	0
S. Hogg, Maclean's Buildings, New Street Square ..	43	4	3
Homœopathic Publishing Company, Finsbury Circus ..	45	0	6
R. S. & J. James, Stanford, near Farringdon ..	20	2	6
T. Jackson, Strangeways, Manchester	89	9	4
G. B. King & Co., 11 Great Marlborough Street ..	13	16	0
B. Keith & Co., New York (estimated)	100	0	0
W. T. Kelsey, Beckenham Road, Penge	11	12	0
L. & H. S. Layland, Warrington	32	11	2
H. Lamplough, Holborn	39	3	0
Lynch & Co., 171A Aldersgate Street	116	11	8
Executors of W. Leaf, 70 Basinghall Street ..	100	0	0
Dr. E. W. Lodge, Michigan, U.S.	14	10	4
G. H. Mason, Poppin's Court, Fleet Street ..	17	7	0
Morrison & Co., Euston Road	17	16	3
Meggeson & Co., Cannon Street	18	1	8
P. Möller, 521 Oxford Street	27	3	0
Norton, Watney & Co., Southwark Street ..	45	7	0
Nelson, Dale & Co., Dowgate Hill	31	12	0
J. R. Neave & Co., Fordingbridge	32	0	0
Oppenheimer & Co., 90 Watling Street	10	13	0
Prout & Harsant, 229 Strand	23	3	0
Price's Patent Candle Company, Battersea ..	10	8	6
Plant Brothers, Birmingham	40	5	4
E. Rimmel, Strand	67	6	2
Mrs. Rogers, Maple Road, Penge, about ..	25	0	0
Richards, Grenville & Co., Brown's Buildings, St. Mary Axe, about ..	30	0	0
J. Shea, 184 Cator Street, Peckham	89	1	2
R. Sonnenthal, 34 Aldermanbury	181	3	0
Stoddard & Co., Philadelphia	12	0	0
H. Scott & Sons, Carlisle	56	14	9
J. Spicer & Sons, 50 Upper Thames Street ..	59	10	10
Schweitzer & Co., 10 Adam Street, Adelphi ..	103	9	6
Taschner & Co., chemists, Leipzig	31	17	0
C. Torehon, Rue Jacob, Paris	12	0	0
H. Turner & Co., 51 Piccadilly, Manchester ..	465	9	0
Whittaker & Co., Ave Maria Lane	14	11	10
F. Walters & Co., 29 Moorgate Street	21	3	4
Weintraud, Joyes & Co., Aldermanbury	23	13	8
J. F. White & Co., Great St. Helen's	18	4	1
Walker & Mason, Great Dover Street	25	3	5
Wertheimer & Co., Circus Place, Finsbury ..	47	8	0
H. T. Williams, 3 Serjeants' Inn, E.C.	10	4	10
Young, White & Co., Suffolk Place, Bermondsey ..	42	4	5

Creditors holding security:—

— Attwater, 37 Essex Street, Strand	1,522	10	0
W. D. Davis, 1 Green Terrace, Clerkenwell ..	378	0	0
Mrs. Turner	2,54	17	10



THE GLASGOW CONFERENCE.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

SIR,—I went to the Glasgow Conference with high expectation, and I am happy to say I was not disappointed.

Nearly 40 years having elapsed since I commenced business, I was curious to know how our young pharmacists comported themselves, and was certainly astonished at the progress manifested.

In my young days we were more anxious to shorten the hours of shop attendance for the mere purpose of bodily relaxation than to dive into the secrets of nature; but now our young friends dash into the mysteries of original research with the coolness and confidence of experienced philosophers. Now, the qualifications required for original research are both rare and varied. In chemistry they must embrace a thorough acquaintance with the whole science, theoretical and practical, including a minute knowledge of the mechanical properties of matter—a familiarity with all that has been done by previous investigators in all countries and ages, not gleaned from second-hand translations in scientific dictionaries, but learned direct from the original memoirs—habits of patient, persevering, undaunted effort, brightened by a lively imagination ready to seize the slightest indication that would connect an effect with its cause. In addition to an enthusiastic love of scientific truth, the investigator must also have abundant leisure to gratify it, which the ordinary exigencies of our business render almost impracticable to most of us. I hope it will not be forgotten that we are traders, and that the principal object of the vast majority of us is to make a living, not a name. We cannot serve two masters, and if we have to choose between converting our shops into laboratories for scientific research and attending to the ordinary common-place routine of buying and selling one of those alternatives must go to the wall, and our natural inclinations must give way to our inevitable necessities. While, therefore, every encouragement should be given to our young members to cultivate the scientific part of their business, they must also be impressed with the fact that all their investigations should be made subservient to the every-day duties of their calling, and that it is the lot of very few to leave their mark on the Alpine heights of original inquiry. But I consider the fame of having one's name wedded to an improved preparation of a familiar drug is as much to be envied as to discover a new alkaloid which may have no therapeutical value.

Professor Redwood's address, and his subsequent remarks on the several papers read at the Conference, were admirable examples of the union of scientific acumen with the power of practical application. He acted as interpreter as well as President, and made everything that was theoretic or recondite intelligible and interesting to the whole audience.

There is one piece of advice I would give to those who intend to read papers at future conferences, which is—to speak more distinctly. I, and many in my vicinity, lost much of some of the papers read. No doubt that was owing to the modesty which usually characterises true merit, but injustice is done to the author himself, besides putting an unnecessary strain on the patience of his hearers, when his reading is low and feeble. Let them imitate the president, who, without apparent effort, made every word distinctly heard, or Professor Atfield, whose voice rang "clear as a trumpet with a silver sound." The bewildering formulæ of modern chemistry will not suffer from being adorned by a few of the minor graces of oratory.

With all respect for those who aspire to the higher platform of scientific research, I would strongly urge upon our younger members the necessity of directing their efforts to the humbler but more immediately useful departments of our calling. Even in the ordinary routine of dispensing many interesting reactions may be observed, which are well worth studying: a precipitate, a change of colour or taste or smell in a prescription may lead to an interesting and useful examination. Pure science is all very well to a man who can live upon his "inner conscious-

ness," *cum* beer and tobacco, but we in these colder latitudes need something more substantial.

It would be wrong to conclude these disjointed remarks without expressing gratitude to our Glasgow friends for their profuse hospitality.

I do not know that there is any connection between intellectual excitement and a craving after the creature comforts, but it was very noticeable that many whose faces were "sicklied o'er with the pale cast of thought" showed remarkable dexterity in the use of their knives and forks.

GEORGE BURRELL.

Montrose : September 26, 1876.

LOCAL ASSOCIATIONS OF CHEMISTS AND DRUGGISTS.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

SIR,—From Mr. Mee's letter in the *Pharmaceutical Journal* of the 23rd inst., and the editor's remarks thereon, I think there is considerable misconception of the objects and aims of the Chemists' Defence Association. The objects, as far as I see and know, are to protect the chemists and advance their interests.

The editor of the *Journal* and Mr. Mee both admit that the Council of the Pharmaceutical Society is not sufficiently representative of the trade, and in my opinion it will require a far different organisation than any that exists at present to accomplish so very desirable an object.

The present method of election for the council, though very broad, does not give the members an opportunity of knowing the views of those seeking election. There has been no organisation of the great body of chemists: hence the majority vote haphazard or in the dark. It is also my opinion—and in this I am not alone—that the council aim too much at the scientific and too little at the practical instruction in the examinations of pupils for the trade. I say, by all means give the highest scientific education you can to those who have the time and the means for chemical research, which is always highly estimated and is invaluable to the community, and I think that such grade should be recognised by a higher title or reward; but the council must not forget that ours is a trade that everyone hopes to get a living by, with due attention to business.

There is very little doubt that the Act of 1868 did much good to the general body of chemists, but in many cases it is nearly inoperative. Legislation has not provided for the supply of drugs in numerous districts too small to support a chemist. These, in many cases, are miles apart, and a great distance from any town. No doubt it was an oversight in passing the Act, but so serious that the defect makes the Act, as I said before, inoperative.

I believe the movement now on foot will do much to strengthen the Pharmaceutical Society, as it will be able to take up many questions a council cannot or is not willing to take up. It will also produce, when fairly carried out, a public opinion that will make its influence felt amongst the chemists of the country, and will, I have no doubt, complete an organisation that will tend considerably to modify the present position of the council to the trade, and will, I hope, make it have a more representative character.

It has been asked what the new association can do that would not be done by the old one. There are many things. I will briefly illustrate one of them by what we have done and propose to do in Chesterfield and East Derbyshire. Late in July, after the Birmingham meeting, we formed a branch association, to embrace the eastern division of the county: it has been with us a complete success, as I have no doubt it will have been in other places where it has been tried.

The trade has long been the victim of unscrupulous customers who have played upon the jealousy which has unfortunately existed so long in the trade, thereby reducing profits to the grocer's level, without the grocer's rapid turnover of stock, his articles being every-day necessities, ours only in very limited demand. The present system of unremunerative prices will continue till there is a better understanding in the trade.

Our branch association has already accomplished more than we expected in so short a time, viz., the good understanding and the determination to act together for the general good. Jealousy of each other exists no longer, and it only excites surprise that

it should have existed so long, as all that each individual wants is an honest and honourable living.

We are now engaged in arranging a schedule of prices, both for dispensing and retail, to suit our locality. We fix a minimum charge: more may be charged, according to locality, the class of customers one may have, and the expensive nature of the drugs used in dispensing.

We have a private mark which is put on all prescriptions dispensed, so that if a prescription is sent to a second establishment it is charged accordingly.

Again, a chemist may have a prescription to dispense for a person in indigent circumstances: he dispenses this for less, but at the same time uses a private mark in addition to the cost mark, which shows his reason for dispensing it for less than the usual charge.

Then I may add that all our members are members of the Birmingham Association, and, whilst loyal to their rules, we adopt our own suitable to the locality. Our subscription for local purposes is 5s. per annum, and has already greatly benefited its members in many ways, besides, what is worth more than all, producing a good understanding amongst them.

Our secretary collects the subscriptions from the members for the general association, and remits them to their secretary, saving much trouble, time, and expense to our members and the general secretary.

If societies like ours were formed all over the country one vast federation of chemists, thoroughly representative in character, would be formed, and would have force and influence upon future legislation that must be heard and attended to.

Thus it will be seen we are doing nothing that can be construed into hostility to the Pharmaceutical Society, and, further, we are doing for ourselves what that society could not do as a general body.

There is room for both in their respective spheres.

I am, yours respectfully,

A. GREAVES.

Chesterfield : September 26, 1876.

Obituary.

AGNEW.—August 21, Mr. James Agnew, chemist and druggist, Great Homer Street, Liverpool. Aged 41 years. Mr. Agnew had been a member of the Pharmaceutical Society since 1869.

ARMITAGE.—September 12, Mr. John Armitage, chemist and druggist, of Dukinfield. Aged 36 years.

ATKINSON.—September 17, Mr. David Atkinson, chemist and druggist, of North Shields. Aged 26 years.

CARR.—July 30, Mr. Robert Carr, chemist and druggist, Berwick-on-Tweed. Aged 47 years.

FAIRS.—September 9, Mr. Joseph Fairs, Rye Hill, Newcastle. Aged 76 years.

GOWING.—August 20, Mr. Joseph William Gowing, chemist and druggist, Snettisham, Norfolk. Aged 55 years.

HEARD.—September 7, Mr. Henry Clement Heard, chemist and druggist, Bridgewater. Aged 58 years.

HOCKENHULL.—September 16, Mr. Thomas Hockenhull, chemist and druggist, of Congleton, Cheshire. Aged 34 years.

MOORE.—September 4, Mr. Joseph Moore, chemist and druggist, Pembroke Dock. Aged 45 years.

NEWCOMBE.—August 19, Mr. John Legge Newcombe, chemist and druggist, Okehampton, Devon. Aged 60 years.

SIMPSON.—September 22, at Edinburgh, Mr. John Simpson, of the firm of Duncan, Flockhart & Co. Aged 39 years.

WIGGINTON.—September 23, Mr. Joseph Wigginton, chemist and druggist, Long Causeway, Peterborough. Aged 36 years. Mr. Wigginton formerly represented Messrs. Richardson & Co., Leicester.

WILLIAMS.—September 5, Mr. Joseph Bower Williams, chemist and druggist, late of Klingawingford, Staffordshire. Aged 26 years.

WOODS.—June 20, 1876, Mr. William Woods, pharmaceutical chemist, Worcester. Aged 60 years.

*In the notice of Marriage, in last issue (Shaw—Shaw), the gentleman's name should have been given as Lee.



[The following list has been compiled expressly for THE CHEMIST AND DRUGGIST by L. de Fontainemoreau & Co., Patent Agents, 4 South Street, Finsbury, London; 10 Rue de la Fidélité, Paris; and 33 Rue des Minimes, Brussels.]

Provisional Protection for six months has been granted for the following:—

2950. R. W. Wallace, of Battersea Park, London, and C. F. Claus, of Great St. Helen's, London. Improvements in the manufacture of salts of barium and other salts, which improvements are also applicable to the extraction of silver from argentiferous pyrites. Dated July 19, 1876.
3117. T. Lewis, of Aberdare, South Wales. Improved internal reversible stoppers for aerated or gaseous liquids. Dated August 5, 1876.
3136. G. Jowett and C. Rushworth, of Sowerby Bridge, Yorkshire. Improvements in stoppers for bottles or other similar articles, and in the method of and means for securing the same on the necks of the bottles. Dated August 8, 1876.
3148. J. Swindells, of Warrington, Lancashire, and R. Lancaster, of Widnes, Lancashire. Improvements in the manufacture of ammonia. Dated August 9, 1876.
3161. J. J. Thomas, of Philadelphia, U.S. Improvements in apparatus for separating liquids. Dated August 9, 1876.
3222. H. G. Cardozo, of Holloway, London. Improvements in apparatus for stoppering bottles, jars, and other receptacles for containing fluid or solid matters, part of which improvements are also suitable for wiring said articles. Dated August 16, 1876.
3247. B. C. Seott, of Parklands, Sussex. Improvements in flasks as regards the stoppering and stoppers for the same. Dated August 18, 1876.
3256. W. Rushworth, of Idle, Yorkshire. Improvements in jar and bottle stoppers. Dated August 19, 1876.
3287. J. Caldwell, of Tyldesley, Lancashire. An improved unguent for the treatment of sores of any description, whether such sores be upon a human being or upon an animal. Dated August 22, 1876.
3379. W. Weldon, of Abbey Lodge, Merton, Surrey. Improvements in lining furnaces to be used for the manufacture of sulphide of sodium and sulphide of potassium. Dated August 28, 1876.
3385. W. Weldon, of Merton, Surrey. A new method or process and a new combination of processes and appliances for obtaining from sulphide of sodium and sulphide of potassium either silicates or aluminates of soda and potash, and either free sulphur or sulphurous acid. Dated August 28, 1876.
3387. W. Weldon, of Abbey Lodge, Merton, Surrey. A new method or process and a new combination of processes and appliances for obtaining from sulphide of sodium and sulphide of potassium caustic soda and caustic potash, and either free sulphur or sulphurous acid. Dated August 28, 1876.

Letters Patent have been granted for the following:—

818. J. E. Molesworth, of Jeypore, British India. Improved apparatus for the application of electricity for disinfecting and curative purposes. Dated February 28, 1876.
877. J. Brière, of Paris. An improved feeding bottle. Dated March 1, 1876.
980. H. E. Canty, of Catherine Street, Liverpool. An improved appliance of the nature of a poultice, useful for various purposes, medicinal or otherwise. Dated March 7, 1876.
984. G. Kendall, of Paddock, Yorkshire. Improvements in stoppers for bottles. Dated March 7, 1876.
1103. J. Neale, of Upper Holloway, London. Improvements in the production of sulphuric acid. Dated March 14, 1876.
1469. W. H. Sinnatt, F. Sinnatt, and T. W. Lingard, all of Manchester. Improvements in stoppers for bottles, and in the method of and means for securing the same. Dated April 6, 1876.
2563. J. Swindells, of Warrington, Lancashire, and R. Lancaster, of Widnes, Lancashire. Improvements in the manufacture of certain chemical products from air and water. Dated June 21, 1876.
2690. J. Duncan and J. A. R. Newlands, of Mincing Lane, London, and B. A. R. Newlands, of Clyde Wharf, Essex. Improvements in the manufacture of sulphate of alumina. Dated June 30, 1876.
2707. J. Duncan and J. A. R. Newlands, of Mincing Lane, London, and B. A. R. Newlands, of Clyde Wharf, Essex. Improvements in the manufacture of sulphate of alumina. Dated July 1, 1876.

Specifications published during the month:—

Postage 1d. each extra.

1875.

4224. R. Rendle. Bottling apparatus. 8d.

4301. M. Prentice. Apparatus for concentrating sulphuric acid, &c. 6d.

1876.

24. T. Sutcliffe and J. Fewings. Apparatus and stoppers for bottling aerated and other liquids. 6d.
33. A. Robottom. Soap. 4d.
41. P. Gaskill. Apparatus for washing bottles. 2d.
78. J. Gillies. Machinery for charging and corking bottles. 4d.
125. W. P. Cherry and C. E. Cherry. Stoppers for bottles, &c. 4d.
164. J. Bolt. Stoppers for bottles, &c. 6d.
184. W. W. Hill. Bottles, jars, &c. 2d.
278. P. Spence. Production of sulphate of potash for the manufacture of alum. 4d.



BANKRUPTS.

CANNING, CORNELIUS, and ROBERT GOOD, trading as CANNING & GOOD, Ringsend, Dublin, glass bottle manufacturers. Sept. 5.

CROSSLEY, CHRISTOPHER, Dyer Street, Chester Road, Hulme, Manchester, manufacturing chemist. Sept. 22.

LIQUIDATIONS BY ARRANGEMENT OR COMPOSITION.

Notices of first meetings of creditors have been issued in re the following estates. The dates are those of the "London Gazette" in which the notices first appeared.

- ATKINS, THOMAS LLOYD JOSIAH, trading as JAMES & Co., Lower Union Street, Dowlais, late Victoria Street, Dowlais, chemist. Sept. 29.
- BLOXHAM, CHARLES WILLIAM MILNES, Halesowen, Worcestershire, surgeon. Sept. 15.
- BROTHERS, FRANCIS, Folkstone, chemist. Oct. 5.
- CARTER, WILLIAM GROVER, 13 Bellevue, Clifton, and Stokescroft, Bristol physician. Sept. 11.
- DALE, CROSSLEY, Hutton Rudby, Yorkshire, late Kelhoe, near Coxhoe, Durham, medical assistant. Sept. 16.
- ECKERSLEY, JAMES, trading as ECKERSLEY BROS., Tonge, Oldham, druggist. Sept. 28.
- HARDING, HORACE EDWIN, 6 Carlton Place, Clifton, Bristol, chemist. Sept. 14.
- HORTON, SAMUEL, Simms Cross, Widnes, chemist. Oct. 6.
- HOWELLS, ROBERT DAVIES, Holyhead, Anglesey, aerated water manufacturer. Sept. 8.
- JOHNSON, JOHN WALTERS, 100 Richmond Road, West Brompton, chemist. Sept. 25.
- LEWIS, JAMES, Nantygwenith Street, Merthyr Tydfil, chemist and aerated water manufacturer. Sept. 25.
- LISTER, THOMAS WILLIAM, 67 High West Street, Gateshead, chemist. Oct. 6.
- OWEN, CHARLES, 6 Paradise Street, Liverpool, chemist, and 112 Derby Road, Bootle, dentist. Oct. 7.
- PEPPER, JOHN HENRY, 21 Claremont Square, Pentonville, professor of chemistry. Sept. 6.
- SPRECKLEY, GEORGE, Tuxford, Nottinghamshire, chemist. Sept. 18.
- TEAL, THOMAS, JUNR., Blackburn Road, Astley Bridge, near Bolton, chemist. Sept. 19.
- WALLWORTH, WILLIAM HENRY, 1 Grove Place, Lorship Lane, Dulwich, chemist. Sept. 23.
- WEST, HENRY CHARLES, Deal, Kent, chemist. Oct. 4.
- YAPP, ELIZABETH & HENRY, trading as E. YAPP & SON, Weobley, Herefordshire, druggists, grocers, and provision factors. Sept. 14.

DIVIDENDS DECLARED.

- AUSTIN, JOHN (Liq.), Lincoln, chemist; first and final div. 3s. 0½d.; G. Jay, 8 Bank Street, Lincoln.
- WARNE, JOHN M. (Liq.), Camborne, Cornwall, chemist; div. 1s. 6½d.; T. Chirgwin, 26 River Street, Truro.

PARTNERSHIPS DISSOLVED.

- BRISTOW, T. F., & Co., 5 Bishopsgate Avenue, perfumers and fancy soap makers. June 30.
- BUCKNILL & MACKENZIE, Rugby, surgeons. August 31.
- DEPLEDGE & JENNINGS, Leeds, druggists. May 6. Debts by John H. Jennings.
- MACFARLAN, J. F., & Co., Edinburgh, chemists. Sept. 12. As regards John A. Wink only.
- MOORE & COOPER, 110 Blue Anchor Road, Bermondsey, surgeons. Aug. 1.
- NAPIER, JAMES, & Co., Vinegar Hill, Camlachie, chemical manufacturers. April 30. As regards James Napier only.
- POKORNY, FIELDER & BACZYNSKI, 15 Fish Street Hill, merchants in drugs, chemicals, and minerals. May 31.
- WAUGH & Co., 177 Regent Street, chemists. Aug. 16.

SCOTCH SEQUESTRATION.

- SYNINGTON, FINLAY & Co., Glasgow and Maryhill, chemical manufacturers and commission agents, and WILLIAM S. FINLAY and JOHN FINLAY, JUNR., the individual partners of that company, as such, and as individuals. Oct. 2, with protection.



TERMS.—Announcements are inserted in this column at the rate of one halfpenny per word, on condition that name and address are added. Name and address to be paid for. Price in figures counts as one word.

If name and address are not included, one penny per word must be paid. A number will then be attached to the advertisement by the Publisher of THE CHEMIST AND DRUGGIST, and all correspondence relating to it must be addressed to the "Publisher of THE CHEMIST AND DRUGGIST, Colonial Buildings, Cannon Street, London, E.C.," the envelope to be endorsed also with the number. The publisher will transmit the correspondence to the advertiser, and with that his share in the transaction will cease.

FOR DISPOSAL.

Bentham's "British Flora," 2 vols., new, cost 3*l.* 10*s.*, price 35*s.* 33/72.

3 ft. 3, long dispensing counter, with upright glass cases. 3/73.

One winch. qt. ol. lavand. Mitcham elect. 1872. Lowe, Chemist, Chesterfield.

Pharmaceutical Journal, 1875, six short, clean, 3*s.* the lot. J. Cross, 1 King Street, Dover.

Lot of mills, mortars, also sundries, sale or exchange, cheap. R. C. Mason, Bromsgrove.

Ladies' laced thread elastic abdominal belt, new, 13 inches by 17, price 7*s.* 6*d.* J. Allen, Chemist, Plymouth.

Three of Treble's London show cases, new, never used, 16*s.* each, together or separate. Ruston, Chemist, Exeter.

28 lbs. good English beeswax. For sample enclose stamp. T. Cuthbertson, Lostwithiel.

Two splendid microscopes for sale, also microphotographs. Mitchell, Chemist, St. Andrew's, Fife.

Muspratt's "Chemistry," 2 vols., good condition. What offers in cash or books? Herbert Chambers, Huntingdon.

Twelve pear-shaped 1-gal. tr. bottles, 12*s.*; one 24 pill machine, nearly new, 15*s.*; 2 label drawers, do., for 8*s.*; 12 3-lb. lilac jars, 12*s.* Giles, York Road, Leeds.

Quantity of slightly soiled trusses and other surgical instruments. Messrs. Redfern & Johnson, Pharmaceutical Chemists, Ashby-de-la-Zouch.

Very handsome bright spider-wheel bicycle, 50-inch front wheel, light and strong, price 5*l.* 10*s.* Chemicus, 331 Lodge Road, Birmingham.

Double-barrel breechloading gun, 12 gauge, central fire, Damascus barrels, never used, 5*l.* 10*s.* Halford, Chemist, New John Street, Birmingham.

A laboratory bench, almost new (same as used at the Pharmaceutical Society's laboratories), fitted with solution bottles, Liebig's condenser, Bunsen burner, &c., &c., suitable for Minor or Major student, cost 6*l.*, may be had cheap. Apply, Benjamin Cocker & Son, Chemists, &c., 97 Newington Green Road, London, N.

A soda water machine, with gas works and rack, with engine and vertical boiler, to make 300 dozen per day. A bargain. Apply to N. G. Wilcocks, Back Street, Bath.

An oil cistern for sale, about 200 gallons, good condition; also two or three casks best white arsenic. What offers? Holgate, Chemist, Market Rasen.

A few gross of 4-ounce empty Eau de Cologne bottles, or would exchange for the 2-ounce size. Metcalfe, Pharmacist, Hull.

Cheap, a set of drawers, 112, 5 inches by 5 by 9; 14, 11 inches by 8½ by 9; in three nests. Also 5-gr. pill machine and brass mortar. Offers wanted. E. Davies, Rnabon.

Smoking cap, new, 5*s.*; microscope, 35*s.*, cost 84*s.*; Tomes' "Dental Surgery," 7*s.* 6*d.*; "Family Worship," 28*s.*, cost 44*s.*; 2 doz. 1-lb. and 2-lb. blue shop jars, 15*s.*; British Pharmacopœia, 1867, 3*s.* 39/258.

The contents of a dentist's workroom, cost 25*l.*, to be sold for 10*l.*, including vulcaniser and all new tools requisite for the trade. Address, or apply for items, A. B., 55 Pentonville Road, London, N.

Pair Maw's mahogany pedestal scales, fig. 5, very little worn, cost 29*s.*; also 4 vols. "Year Book of Pharmacy," good as new; also half-guinea cash-box, good as new. Offers wanted. Mr. Eastman, Chemist, Tottenham.

The *Pharmaceutical Journal*, from January, 1875, to July, 1876 (first six months bound); Rhind's "Vegetable Kingdom;" Miller's "Chemistry," new edition; no reasonable offer refused. Medicus, Post Office, Chester.

Muter's "Chemistry," new, 10*s.* 6*d.*; British Pharmacopœia, 1867, good repair, 5*s.*; Royle & Headland's "Materia Medica," 5*s.*; Maw's swimming belt, new, middle size, 5*s.* 6*d.* All carriage paid. J. Lea, Hinstock, Market Drayton, Salop.

The framework (without top) of a well-made and very substantial counter, used in bank, good as new, front and back grained oak, 10 feet long by 2 feet 10 inches wide, 4 drawers with locks (2 keys only), price 30*s.* W. Jackson, Crediton.

Sixty-gallon gasometer, with fittings, wash-bottles, &c.; 12 lbs. ammon. nit., large chemist's street lamp, two gilt wood molar teeth, two large iron mortars, soda-water rack, shop gas stove, sundry patents and drugs. Dr. Branson, Rotherham.

30 gallons mirbane, slightly mixed with sea water, 1*s.* per lb.; 400 lbs. German tubing, ½ to ¾ diameter, 7*d.* per lb.; 10 gallons ol. carui exot., 3*s.* per lb.; 2 gallons ol. juniper, 1*s.* per lb.; 6-gallon copper still, with movable head and pewter worm, in tub, 42*s.*, packages extra. J. Wiggins, Ipswich.

Attfield's "Chemistry," 7*s.*; Fownes' "Chemistry," 5*s.*; Smith's "Pharmaceutical Guide," 3*s.*; Bentley's "Botany," 6*s.*; British Pharmacopœia, with additions, 2*s.* 6*d.*; "Pharmaceutical Latin Grammar," 2*s.*; the lot for 1*l.* I. D., 110 Cheltenham Road, Bristol.

For cash. — Caesar's "Commentaries," complete, Owgan's "Translation of Caesar," "Anatomical Remembrancer," cost 3*s.* 6*d.*; Muter's "Chemistry," Fownes' "Chemistry," Pereira's "Selecta," Bentley's "Botany," British Pharmacopœia, with additions. O. W. Catford, Lyme, Dorset.

Surplus stock. Several gross 8-oz. best bottles, clean, at 8*s.*; 1 gross caper green, at 4*s.*; pair earboys, cut stoppers, 4 gallons, 10*s.* each; some fine arrowroot, at 10½*d.*; balsam sulphur, 5*d.*; bright English wax, 1*s.* 9*d.*; morphia hydrochlor., 9*s.* 6*d.*; all Maw's feeders, 10 per cent. off list. Padwick, Redhill.

Evans' materia medica cabinet, cost 7*l.* 7*s.* (nearly as good as new); no reasonable offer rejected. Mr. Walker, 62 Adeler Terrace, Antrim Road, Belfast.

Magneto-electric machine, powerful double magnets, solid mahogany lock-up case, sound condition, 19*s.* Medicus, 55 Great King Street, Birmingham.

About 1 cwt. of type, mostly small, 2 composing sticks, 2 rollers, borders, stand, brushes, &c., 10*l.*; Ainsworth's "Latin Dictionary," 1808 edition, 6*s.*; "Selecta e Præscripti," 13th edition, 3*s.*; Pratt's "Flowering Plants, Grasses, and Ferns of Great Britain," 6 vols., new, 56*s.*; London's "Trees and Shrubs of Great Britain," 3,000 illustrations, 16*s.* Wellington, Freshwater, I. W.

What offers? The *Pharmaceutical Journal*, from commencement, 25 vols., half bound, remainder in Nos., complete; upright counter scales, with weights, 7½ lbs.; 8-in. box end beam dispensing scales, brass pillar, glass pans, mahogany stand; 5-grain No. 24 pill machine; 4-grain No. 33 pill machine, slide drawer, new. Will take large mortar and pestle in exchange. Wyld, Chemist, Macclesfield.

Twenty-four 32-oz., twelve 20-oz., twelve 16-oz. stoppered shop rounds; twenty-four 4-lb., twelve 1-lb., twenty-four 8-oz. white shop jars, labelled, dome lids; two show jars, 18 in., with scroll and Pharmaceutical arms and stands; one 4-gal. globe, cut stopper; about 3 doz. 8-oz. narrow-mouthed stoppered rounds. What offers? Address, W., 33 Castle Gate, Newark.

Statham's 3*l.* 3*s.* chemical chest, in good condition, 1*l.* 10*s.*; Southall's materia medica cabinet, 12*s.* 6*d.*; Wittstein's "Practical Chemistry," 1*s.* 6*d.*; Barff's "Chemistry," 3*s.*; Beasley's "Prescriptions," 3*s.*; Christison "On Poisons," 3*s.* 6*d.*; Smedley's "Hydrophy," 9*d.*, and few other books cheap; medico-galvanic machine, 2*l.*, or exchange. "Student," care of Thresh, Buxton.

Two pyramid stands, as Treble's 150, without mirrors, 1*l.* each; 2 1-gal. globes, cut stoppers, 5*s.* each; 2 specie jars, 20 inches by 12 inches, 30*s.* pair; copying press, 15*s.*; large day and night telescope, 2*l.* 10*s.*; 21*s.* fountain enema, 10*s.*; several box enemas at half price; *Pharmaceutical Journal*, 1842-3-4-5, 1853-4-5-6-7-8-9, 1860-1-2-3-4-5-6-7-9, 3*d.* each. J. Wheeldon, 241 Stockport, Manchester.

Miller's "Chemical Physics" (published 10*s.* 6*d.*), 5*s.*; Miller's "Organic Chemistry" (21*s.*), 10*s.* 6*d.*; Normandy's "Chemical Analysis" (10*s.* 6*d.*), 5*s.*; Churchill's "Manuals," by Royle, Fownes, Taylor, Fergusson, Carpenter, Wharton, Jones (75*s.*), 25*s.*; Cooper "On Hernia," 5*s.*; Ramsbottom's "Midwifery" (12*s.*), 6*s.*; Turner's "Chemistry" (30*s.*), 5*s.*; Jahr's "Manual Homœopathic Medicines," translated, 2 vols. (30*s.*), 10*s.*; "Year-Book of Pharmacy," 1870-74, 5 vols., nearly new (42*s.* 6*d.*), 20*s.*; Watson's "Physics," 2 vols., 6*s.*; Liebig's "Chemistry of Food and Agriculture," 2 vols., 6*s.*; Lindley's "Botany" (18*s.*), 6*s.*; West's "Diseases of Infancy" (14*s.*), 5*s.*; Ellis's "Demonstrations, Anatomy," no title page (12*s.* 6*d.*), 3*s.*; Squire's "Companion," 5th. 5*s.*; Plattner's "Blowpipe," new (21*s.*), 10*s.* 6*d.* M. Percy, 12 James Street, Haymarket, S.W.

Post paid.—Piesse's "Perfumery," 6*s.*; Guy's "Forensic Medicine" (published 10*s.* 6*d.*), 5*s.*; Ballard's "Diseases, Infants and Mothers," 2*s.* 6*d.*; Squire's "Three Pharmacopœias," 4*s.*; Steggall "On Poisons," 12 coloured plates, "British Poisonous Plants," 3*s.*; Jukes "On Indigestion," 2*s.* 6*d.*; Beasley's "Receipt Book," 3*s.* 6*d.*; Roscoe's "Elementary Chemistry," 2*s.* 3*d.*; Wilmott's "Glycerino and Cod Liver Oil," 1*s.* 6*d.*; Arnott's "Physics," 2 vols. (published 31*s.* 6*d.*), 7*s.* 6*d.*; Forbes Winslow's "Insanity" (published 5*s.*), 2*s.* 6*d.*; Dobell's "Tuberculosis," 3*s.*; Balmann's "Chemistry" (published 6*s.*), 3*s.*; "Malaguti et Fabre Chimio," 1*s.* 6*d.*; Bennett's "Clinical Medicine, Method of Examining Patients," 3*s.*; "Anatomical Remembrancer," 2*s.* 6*d.*; Meade's "Manual Apothecaries' Hall," 2*s.* 6*d.*; Nesbit's "Agricultural Chemistry," 2*s.* 6*d.* M. Percy, 12 James Street, Haymarket, S.W.

An iron weighing-machine platform, on wheels, to weigh 3 cwt., price 50*s.*; about 12 gross Binko's penny dyes, 4*s.* gross; about 6 doz. suspensory bandages, in good condition, slightly soiled (travellers') samples, usual price 6*s.* to 33*s.* per doz., 6*s.* doz.; about 6 doz. trusses of various makes, 12*s.* doz.; 1 gross of syringes in wood cases, quite new, 24*s.* gross; a few glass bottles with plated taps, 2 gallon size, as illustrated in Bourne & Taylor's catalogue, 12*s.* each; about 2 gross sponge bags, some of them slightly soiled (oiled silk, alpaca, and check, &c.), 4*s.* per doz.; phrenological charts, retail 6*d.*, 2*s.* per doz. Apply, by letter only, to Mr. Smith, 4 Lucretia Road, Kennington Lane, London, S.E.

A pair specie jars, glass, gold covers, handsome device, almost new, 55*s.*; plate-glass sponge case, as Maw's 92, 5*l.* 5*s.*; plate-glass counter case, 6 ft., Maw's 105, 7*l.* 10*s.*; 6-ft. ditto, as Maw's 99, 7*l.*; upright glass case to stand on floor, marble top, 4 ft. 6 long, 3 ft. high, 5*l.*; dispensing screen, 6 ft. long, glass case each end, looking-glass centre, with marble slab in front, plate glass, very elaborate, 8*l.*; a do. do., 7 ft. long, 8*l.* 10*s.*; a do. do., as Maw's 40, 4 ft. long, 4*l.* 10*s.*; a 3-ft. counter case, as Maw's 100, 2*l.*; a 3-ft. 6 do. do., as Maw's 22, 3*l.* 5*s.*; an 8-ft. dispensing counter, fitted with 14 drawers and shelves, with dispensing screen on top, 8*l.*; a 4-ft. 6 long upright case, 3 ft. high, 5*l.* 10*s.*; a Kent's tooth-brush case, 27*s.*; a plate-glass counter case, as Maw's 96, 2 ft. 9 long, 3 trays, 58*s.*; a 4-ft. do., as Maw's 16, 3*l.* 10*s.*; a 4-ft. 6 bent stout sheet-glass case, as Maw's 22, 3*l.*; a 6-ft. 6 bent plate-glass counter case, as Maw's 104, ebonized mahogany, 7*l.*; 3 glass cases, as Maw's Nos. 7 and 8, 21*s.* each; 24 glass-shade cases, as Maw's 81; a 24-pill machine, 5-grain, marble slab, almost new, 18*s.*; an 18 do. do., 3 grains, almost new, 15*s.*; dispensing scales, as Maw's 7, 16*s.*; a mahogany pedestal do, new, fig. 5, 20*s.*; 2 large marble mortars; a small walnut cabinet, 5 drawers, very handsome, 20 in. high 14 wide, 9 in. deep, 25*s.*; a desk and case, as Maw's 21, 65*s.*; 30 pear-shape carboys, from 2 to 10 gallons; several upright do.; a pair specie jars, gold covers, 45*s.*; 12 lozenge jars, labelled, cut knobs, 2*s.* 9*d.* each; 12 do. do., as fig. D, glass, gold covers, elaborately labelled, 7*s.* 6*d.* each; 72 small glass mortars, 1*s.* 9*d.* each; a water bath, fig. A, vial stand, mahogany; palette knives; pill do.; pill slabs; plaster iron; iron retort stand; also fittings and utensils, suitable for chemists, &c., very cheap. Natali, 213 Old Street, City Road, E.C.

One 3 ft. 3 long, one 4 ft. 2 long, one 4 ft. 6 long, one 6 ft. long, one 7 ft. long dispensing counter, with upright glass cases and screens on top; 30 superior mahogany moulded top counters, from 4 ft. to 20 ft. long; 10 nests deal dovetailed counter drawers for labels, &c., from 2 to 12 ft. long, as Treble's 72; handsome mahogany wall cases, with cupboard under, 2 ft. 8 long, 4 ft. 6 long, 7 ft. long, 8 ft. 10 long, 11 ft. 6 long, 13 ft. 4 long, similar to 198, 199, 200, 202 Maw's; nearly new mahogany shop fixtures, from 2 to 20 ft. long, as figs. 192, 193, 194, 196 Maw's; 600 mahogany shop drawers, from 1 ft. 4 to 16 ft. long; one 4 ft. 6 long superior mahogany desk, with embossed glass screen, similar to No. 80 Treble's; one 6 ft. long mahogany desk, with stand, as Treble's 159; Treble's beech revolving office chair, as No. 173; 2 ft. 3 long handsome plate-glass show case, with desk, with silvered plate-glass back and plate-glass shelves, as Treble's 76; 3 ft. 6 long sloping-front plate-glass case, with plate-glass shelves, as Treble's 109; 2 ft. 9 long, 14 in. wide, 11 in. high, bent plate-glass show case, with plate-glass shelves and mahogany shelf at back, similar to Maw's fig. 8; handsome plate-glass tooth-brush case, similar to Maw's 72; fifteen 6-gal., six 3-gal., four 4-gal., six 6-gal., five 8-gal., one 12-gal., one 16-gal., pear-shape window carboys; 20 handsome specie jars, with Royal arms, &c.; handsome gold-labelled glass jars, as fig. A, D and 2 Maw's; handsome cut-glass show jars, as fig. 1 Maw's; 15 mahogany window enclosures, all sizes; Cranstone's paint mill; mahogany label chest; 1,200—4, 8, 10, 16, 20, 30, 40 oz. shop bottles; 60—1-gal., 1½-gal. upright black glass stock bottles, with Japan and gilt caps; dispensing and counter scales, pill machines, mortars, glass measures. Lloyd Rayner, 333 Kingsland Road, London, N.

WANTED.

Bentley's "Botany," good condition, cheap. Jos. Smith, 273 Deansgate, Manchester.

Chemist and Druggist for January, 1871. Address, Fairlie, Chemist, Glasgow.

Pindar's rotary pill machine, second-hand, wanted to purchase, any size; send particulars and price to Bowens Brothers, Chemists, Chester.

Garrod's "Materia Medica," latest edition. State price to Peake, Chemist, Earlestown, Lancashire.

Wanted to exchange for British Pharmacopœia and Beasley's "Pocket Formulary," 4 vols. "Year-Book of Pharmacy," condition equal to new. G., 75 Brook St., Ratcliff, London, E.

ADDRESSES AND INFORMATION WANTED.

Chemists able to give any information in reply to queries printed below respectfully requested to communicate the same, addressing in the first instance to the reference figure given, "Care of the Publisher of THE CHEMIST AND DRUGGIST." Charge for insertions, 1d. per word.

Albert Denn, supposed assisting surgeon. 4/231.

Colonel Wood—wounded in the knee at Delhi. 5/222.

Wanted, the address of Mr. Margetts—tall, sandy whiskers. 22/233.

The Rev. Samuel Richard Dingley, Vernon Spicer Simmonds. 4/230.

William Dickinson (Colliery Secretary), late of Leeswood, Mold. 15/243.

Mr. James Hunt, formerly of Clerkenwell. "Blunderfield" would be glad to hear from him. 24/232.

J. T. Stillwell—professed to be an agent to the Whittington Life Assurance Company; tall, slight, black whiskers. 14/230.

Trade Notes.

MR. JOHN BAKER, Market Place, Romsey, having retired into private life, has disposed of his business to Mr. G. Francis, who for many years was senior assistant to Messrs. W. & J. Burrow, Great Malvern.

MR. E. S. HERMES (late manager with Leath & Ross, and many years with James Epps & Co.) has succeeded to the business of Messrs. Conyngham & Co., homœopathic chemists, 13 Stephen's Green, N., Dublin.

MR. GEORGE SMITH DUBERLY, from Rye, Sussex, has succeeded to Mr. Gage's business at Luton.

MR. W. J. WHITE, of Merthyr Tydfil, has taken the business of Cottrell & Bond, at 123 London Street, Reading.

MR. G. B. KEY, from Glasgow, is about to commence business at Kirkealdy.

WE NOTICE from an advertisement that Messrs. E. Crawshaw & Co., of Burnley, aniline dye merchants, who first supplied the colours in solid form, have now removed to 15 Charterhouse Street, London, E.C., near the Holborn Viaduct. This looks like a flourishing business.

AMONG the English firms who have received awards at the Centennial, Philadelphia, are the Patent Plumbago Crucible Company, Battersea Works, London, for dental porcelain, jewellers' and chemists' furnaces, muffles, crucibles, and scorifiers.

A NEW, very agreeable, and highly recommended infants' food is introduced into England from Germany. It is called Giffey, Schiele & Co.'s Lacteous Farina. It only needs mixing with water to form a nutritive milky food, representing the child's natural nourishment. It is made at Rohrbach, near Baden, and is supplied in London by Dramburg & Co., Albert Buildings, Queen Victoria Street.

IT IS NOW so usual for chemists to present their customers with a little almanac towards the beginning of a new year, and the method is so obviously advantageous, that it is not necessary for us to draw attention to its desirability. We merely wish to mention two firms who especially cater for chemists in this respect, and who have both sent us samples of their products. Messrs. Cassell, Petter & Galpin supply several varieties of octavo almanacs, some of them illustrated, and all containing a most excellent selection of literary matter. They undertake to supply only one person in each town with the same almanac, which is got up with the name of the tradesman simply. The cost of these almanacs varies from about 2l. to 2l. 10s. per thousand, an expense which may be reduced by taking advertisements.

MR. SILVERLOCK also supplies very elegantly printed little sachet almanacs, for perfuming, with a number of pages left blank, on which he prints, to order, notices of specialities. These, nicely perfumed, make a very pretty present, which any lady will keep. They are more costly than the other kind. Either firm will send sample and terms.

WE have also received, very late, some specimens of card calendars from Messrs. Waud & Graves, as advertised.

MESSRS. ALLEN & HANBURYS, have lately established a factory at Lewisham expressly for their Hawker's patent jujubes, with which they are making quite a large trade. They have still further improved the manufacture, and both in this country and in America have found great favour for these products.

MR. W. H. CHILD, of Finsbury, has lately introduced quite a novelty in tooth brushes, which he entitles "The Smoker's." The front half of the bristles are hard, the rest soft, so that either can be applied to different parts of the teeth. We cannot see exactly why smokers only should get the benefit of this notion. Perhaps some ladies might like to use them, but it would be a courageous one who dare step in a shop and ask for the article.

MESSRS. BOURNE & TAYLOR have introduced some very elegant new chest protectors for the season, with silken backs, which they call the "Bon-Ton." Another new one they name the "Cygnets."

We also call attention to the chest and lung protectors manufactured by Mr. George Pattison, of 139 St. John Street Road. Some of these have been slightly modified in form this season, so as to make them wear more conveniently. In regard to quality Mr. Pattison's manufacture is so highly esteemed that we need not remark upon his goods in this respect.

THE ART OF POTTERY in its connection with the interest represented by this journal seems likely to be well represented at the Centennial. The largest manufacturers of crucibles in the world, the Patent Plumbago Crucible Company, of Battersea, London, have sent over a large assortment of their productions, which have been placed on exhibition in the building. One of the managers of the Plumbago Crucible Company recently visited Philadelphia to see that they are properly represented. The manufactures of this company are well known throughout the world, and we are pleased to learn that they have established agencies in this country.—*The Jeweller and Silversmith, Philadelphia.*



HE last month has decidedly worn a more cheerful character commercially, and the feeling is almost universal that the worst is now over. The prospect of peace in Turkey, which has become more defined within the past few days, will largely tend to strengthen this feeling, and if it should happen that the ultimate result of the recent excitement throughout Europe on the Eastern question should be not only the pacification, but also the civilisation, of Turkey and her principalities, some of the finest provinces of the world, there is even yet a good time in store for our quarter of the globe. The next month will assuredly show the tendency of events both political and commercial, and we are disposed to look on both hopefully.

Although reports of a revival in business are so general the official returns continue to furnish evidence that the diminution of our national export trade has not yet been arrested. The declared value of the exports last month was 17,777,917*l.*, whereas in September, 1875, it was 19,853,750*l.* The steady manner in which our imports keep up indicate that home trade is not suffering, and that, notwithstanding the serious limitations of income which must have been occasioned by the collapse of so many so-called investment securities during the past two or three years, the buying power of this country is hardly perceptibly diminished. The monthly increasing gap between the amount of our exports and that of our imports, while it cannot but have a discouraging effect, yet affords a proof of the singular position of enterprise occupied by this country. The balance of trade is invariably against us, a condition of affairs which would soon reduce any other nation to insolvency. But England stands it year by year, and even grows in wealth, for the reason that her interests are so world-wide, and the enterprise of Englishmen so cosmopolitan, that the national ledger by no means covers the transactions in which they take part.

All chemical reports are to the effect that business has been brisker this month than for some considerable time past. Those chemicals which are, as it were, the key-notes of the trade, indicate also this welcome change by a recovery in price. Soda, bleaching powder, oxalic acid, are all higher, and will probably advance still further. Makers, at all events, are very firm at the present moment. It has been known for some time that orders were being placed by agents as quietly as possible, so as to avoid any sudden advance, and now that an apparent movement for the better has come the sellers are generally so fully provided with contracts that they are by no means eager to conclude forward bargains, except at good rates. Soda especially shows strength. A good business has been done in bleaching powder at 7*s.* to 7*s.* 3*d.*, and for forward delivery at more money. Cream of tartar, after an advance, has considerably relapsed, and is now dull at 101*s.* to 102*s.* Tartaric is dull, and quoted at 1*s.* 4³/₄*d.* to 1*s.* 5*d.*, but a large quantity of foreign has been sold to end of the year for 1*s.* 4*d.* Citric is quiet and easier at 2*s.* 8*d.* Chlorate of potash has advanced more than 1*d.* per lb., and manufacturers decline further orders at that. Borax is slightly easier, as is also arsenic.

Sulphate of quinine has largely advanced, owing to the unusual scarcity of quinine yielding barks. Though the demand has slackened, the price is still kept up.

Iodine fluctuates between 5³/₄*d.* and 6*d.* Mercury keeps steady at 8*l.*, the Californian shipments of this metal tending to check those rapid variations in price to which we had become accustomed.

Much activity has been manifested at one or two of the drug sales held during the past month, and in several prominent instances prices are stronger. Castor oil, camphor, aloes, cinchona barks, senna and cardamoms are most noticeable in this respect. Capiivi balsam, on the other hand, has declined to the extent of 2*d.* per lb., and cod liver oil is slightly easier, owing to the usual slackening in demand at this season.

New season's camomiles have been brought forward, and seem to threaten extreme prices. In England the crop has almost entirely failed, while Germany and Italy both report unusual scarcity. New crop opium has also been brought forward in very limited proportions. Reports are still circulated as to the deficiency of supply, and if such were the case to any considerable extent the market ought to have shown it before this. We expect it will prove that a somewhat smaller crop has been grown this year, but that the yield has been fairly abundant. A slightly higher average price may therefore be looked for in the ensuing year. Essences of lemon and bergamot are said to be good and plentiful this year. American peppermint has likewise a downward tendency in price; but lavender, both English and foreign, is scarce and dearer. Good supplies of manna and saffron are expected.

A very considerable advance has occurred in the price of cochineal, especially in Honduras. Fully 6*d.* per lb. additional has been made in recent sales. This is of course due to a smaller supply. It will probably turn out, however, that first reports of almost total failure are much exaggerated.

The quarterly indigo sales commenced on the 9th inst., and were marked by brisk competition, the desirable qualities of Bengal and Oude realising fully 1*s.* advance on the prices of the last sale, whilst the pale and mixed sorts, and also the bought in and second-hand lots, only found buyers at about 9*d.* to 10*d.* above the July rates.

An advance occurs in cinnamon, cloves, and some kinds of ginger, and a very considerable one in mace and nutmegs.

Oils are higher almost all round. Linseed takes the lead and marks 2*l.* per ton higher than last month. Rapeseed oils are also 1*l.* to 30*s.* higher. Olive oils are quoted about the same, but they are decidedly firmer. From the reports issued about the olive crop it seems really marvellous that we should ever get any oil at all. Hot and dry weather in some places, heavy rains in others, cold and mists elsewhere, sirocco winds sometimes, and worms invariably, are a few of the troubles through which the olive has to pass before it ripens. The slow degrees in which the market rises indicate how calmly dealers have trained themselves to listen to these alarming rumours.

Petroleum has barely kept up the sensational advance which we reported last month. It was to be expected that holders of second-hand lots would be anxious to realise on such splendid terms as the immense rise offered, and this we believe is the only reason for the slight reduction in the quotation. Refiners, we hear, are quite firm, and likely to continue so.

THE BABY was doubled up by the cramps and yelling at the rate of a mile a minute, as the father and mother stood over the crib with a laudanum bottle between them. "No, Mariar," he said gently, but firmly, "you pour it out; that child's growing so much like your mother that I can't trust myself."

IRISH PHARMACY.—The *Medical Times* prints the following as a copy of label taken off a bottle of medicine supplied by a firm of druggists of Cork:—"Caution.—To all medicines for outward application this label is attached to the bottles, in order to distinguish it from others for internal use, but persons unable to read should not be allowed to administer medicines, and never give or take a dose without first perusing the label.—Signed, ———."

Monthly Price Current.

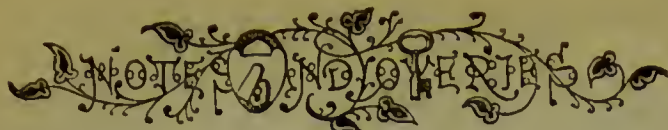
The prices quoted in the following list are those actually obtained in Mincing Lane for articles sold in bulk. Our Retail Subscribers must not expect to purchase at these market prices, but they may draw from them useful conclusions respecting the prices at which articles are offered by the Wholesale Firms.

CHEMICALS.		1876.		1875.	
ACIDS—		s. d.	s. d.	s. d.	s. d.
Acetic	per lb.	0 3½	te 0 0	0 4	to 0 0
Citric	"	2 8	.. 0 0	2 10	.. 2 11
Hydrochloric	per cwt.	5 0	.. 7 0	4 0	.. 7 0
Nitric	per lb.	0 4½	.. 0 0	0 5	.. 0 5½
Oxalic	"	0 5½	.. 0 5½	0 5½	.. 0 0
Sulphuric	"	0 0½	.. 0 0	0 0½	.. 0 1
Tartaric crystal ..	"	1 4½	.. 1 5	1 6½	.. 0 0
powdered ..	"	1 4½	.. 1 5	1 6½	.. 0 0
ANTIMONY ore	per ton	280 0	.. 300 0	260 0	.. 300 0
crude ..	per cwt.	42 0	.. 0 0	40 0	.. 0 0
star	"	59 0	.. 61 0	59 0	.. 60 0
ARSENIC, lump	"	26 6	.. 27 0	30 0	.. 0 0
powder	"	10 3	.. 0 0	13 6	.. 13 9
BRIMSTONE, rough ..	per ton	120 0	.. 130 0	150 0	.. 0 0
roll ..	per cwt.	10 6	.. 0 0	10 0	.. 10 3
flour ..	"	13 6	.. 0 0	12 6	.. 15 0
IODINE, dry	per oz.	0 5½	.. 0 0	0 7½	.. 0 0
IVORY BLACK, dry ..	per cwt.	8 6	.. 0 0	8 6	.. 0 0
MAGNESIA, calcined ..	per lb.	1 8	.. 0 0	1 6	.. 0 0
MERCURY	per bottle	160 0	.. 0 0	294 0	.. 0 0
MINIUM, red	per cwt.	23 3	.. 0 0	24 0	.. 25 6
orange ..	"	37 0	.. 0 0	37 0	.. 0 0
PRECIPITATE, red ..	per lb.	3 11	.. 0 0	5 6	.. 0 0
white ..	"	3 10	.. 0 0	5 5	.. 0 0
PRUSSIAN BLUE ..	"	0 0	.. 0 0	0 0	.. 0 0
SALTS—		1876.		1875.	
Alum	per ton	140 0	.. 150 0	155 0	.. 160 0
powder	"	157 6	.. 0 0	165 0	.. 167 6
Ammonia:					
Carbonate	per lb.	0 5	.. 0 5½	0 7	.. 0 7½
Hydrochlorate, crude,					
white	per ton	560 0	.. 700 0	640 0	.. 0 0
British (see Sal Am.)					
Sulphate	per ton	380 0	.. 390 0	365 0	.. 375 0
Argol, Cape	per cwt.	80 0	.. 87 0	88 0	.. 95 0
Red	"	70 0	.. 75 0	80 0	.. 98 0
Oporto, red ..	"	33 0	.. 34 0	34 0	.. 36 0
Sicily	"	0 0	.. 0 0	60 0	.. 62 6
Ashes (see Potash and Soda)					
Bleaching powd. ..	per cwt.	6 9	.. 7 3	8 0	.. 8 3
Borax, crude	"	30 0	.. 40 0	30 0	.. 53 0
British reind. ..	"	42 6	.. 43 6	53 0	.. 0 0
Calomel	per lb.	3 6	.. 0 0	5 0	.. 0 0
Copper:					
Sulphate	per cwt.	21 6	.. 22 0	26 0	.. 0 0
Copperas, green ..	per ton	55 0	.. 60 0	65 0	.. 0 0
Corrosive Sublimate p. lb.		2 11	.. 0 0	4 4	.. 0 0
Cr. Tartar, French, p. cwt.		101 0	.. 0 0	112 0	.. 0 0
brown ..	"	80 0	.. 85 0	95 0	.. 98 0
Epsom Salts	per cwt.	5 3	.. 7 0	6 6	.. 0 0
Glauber Salts	"	4 6	.. 5 6	6 6	.. 0 0
Lime:					
Acetate, white, per cwt.		11 0	.. 20 0	11 0	.. 20 0
Magnesia: Carbonate ..	"	45 0	.. 0 0	42 6	.. 0 0
Potash:					
Bichromate	per lb.	0 4½	.. 0 4½	0 5	.. 0 0
Carbonate:					
Potashes, Canada, 1st					
sort	per cwt.	24 0	.. 0 0	28 6	.. 29 0
Pearlshades, Canada, 1st					
sort	per cwt.	23 6	.. 0 0	39 0	.. 0 0
Chlorate	per lb.	0 9½	.. 0 10	0 9	.. 0 0
Prussiate	"	0 11½	.. 1 0	1 0½	.. 0 0
red ..	"	0 0	.. 0 0	3 2	.. 3 3
Tartrate (see Argol and Cream of Tartar)					
Potassium:					
Chloride	per cwt.	7 0	.. 0 0	7 0	.. 0 0
Iodide	per lb.	7 9	.. 0 0	9 0	.. 0 0
Quinine:					
Sulphate, British, in					
bottles	per oz.	9 4	.. 9 6	6 6	.. 0 0
Sulphate, French ..	"	9 6	.. 0 0	6 6	.. 0 0
Sal Acetos	per lb.	0 7½	.. 0 0	0 8½	.. 0 0
Sal Ammoniac, Brit. cwt.		44 0	.. 45 0	44 0	.. 45 0
Saltpetre:					
Bengal, 6 per cent. or					
under	per cwt.	17 3	.. 18 3	18 0	.. 18 9
Bengal, over 6 per cent.					
per cwt.		17 0	.. 17 6	17 0	.. 17 6
British, refined ..	"	22 3	.. 23 9	22 6	.. 23 6
Soda: Bicarbonate, p. cwt.		11 0	.. 11 3	12 0	.. 0 0
Carbonate:					
Soda Ash	per deg.	0 1½	.. 0 2	0 2½	.. 0 0
Soda Crystals per ton		85 0	.. 97 6	90 0	.. 0 0
Hyposulphite, per cwt.		0 0	.. 0 0	0 0	.. 0 0
Nitrate	per cwt.	11 3	.. 11 6	11 3	.. 11 9
SUGAR OF LEAD, White cwt.		37 6	.. 38 0	43 0	.. 0 0
SUGAR OF LEAD, Brown, cwt.		27 0	.. 0 0	32 0	.. 0 0
SULPHUR (see Brimstone)					

		1876.		1875.	
		s. d.	s. d.	s. d.	s. d.
VERDIGRIS	per lb.	1 1	to 1 5	1 1	to 1 5
VERMILION, English ..	"	3 2	.. 0 0	3 4	.. 0 0
China ..	"	0 0	.. 0 0	0 0	.. 0 0
DRUGS.		1876.		1875.	
ALOE, Hepatic	per cwt.	70 0	.. 160 0	60 0	.. 160 0
Socotrine ..	"	65 0	.. 180 6	60 0	.. 200 0
Cape, good ..	"	47 0	.. 48 0	34 0	.. 38 0
Inferior	"	40 0	.. 46 0	30 0	.. 33 0
Barbadoes ..	"	50 0	.. 190 0	40 0	.. 175 0
AMBERGRIS, grey	oz.	55 0	.. 65 0	40 0	.. 60 0
BALSAM—		1876.		1875.	
Canada	per lb.	1 2	.. 0 0	1 9	.. 0 0
Capivi	"	1 6	.. 1 8	2 7	.. 2 8
Peru	"	4 9	.. 5 3	5 0	.. 5 6
Tolu	"	0 0	.. 0 0	5 0	.. 0 0
BARKS—		1876.		1875.	
Canella alba	per cwt.	26 0	.. 27 0	16 0	.. 27 0
Cascarilla	"	16 0	.. 20 0	16 0	.. 22 6
Peru, crown & grey per lb.		1 5	.. 3 0	0 8	.. 2 6
Calisaya, flat ..	"	2 9	.. 4 6	1 10	.. 5 4
quill ..	"	2 9	.. 4 11	2 0	.. 5 4
Carthagenia ..	"	2 0	.. 2 11	1 0	.. 2 2
Columbian ..	"	1 9	.. 3 9	1 0	.. 2 9
E. I.	"	1 9	.. 4 6	1 0	.. 4 6
Pitayo	"	0 10	.. 2 4	0 4	.. 1 9
Red	"	2 0	.. 4 6	1 6	.. 4 6
Buchu Leaves	"	0 1	.. 1 1	0 1½	.. 1 1
CAMPHOR, China ..	per cwt.	75 0	.. 76 0	70 0	.. 0 0
Japan ..	"	75 0	.. 76 0	0 0	.. 0 0
Refin. Eng. per lb.		1 0½	.. 0 0	1 1	.. 0 0
CANTHARIDES	"	3 0	.. 3 8	3 6	.. 5 3
CHAMOMILE FLOWERS p. cwt.		45 0	.. 220 0	45 0	.. 60 0
CASTOREUM	per lb.	7 0	.. 25 0	6 0	.. 24 0
DRAGON'S BLOOD, lp. p. cwt.		100 0	.. 260 0	130 0	.. 260 0
FRUITS AND SEEDS (see also Seeds and Spices).		1876.		1875.	
Anise, China Star per cwt.		85 0	.. 105 0	112 0	.. 115 0
Spanish, &c. ..	"	28 0	.. 40 0	30 0	.. 35 6
Beans, Tonquin ..	per lb.	1 7	.. 2 6	1 5	.. 1 9
Cardamoms, Malabar					
good	"	3 6	.. 4 1	4 0	.. 5 3
inferior	"	0 9	.. 5 3	1 9	.. 3 6
Madras	"	2 0	.. 3 8	2 6	.. 4 9
Ceylon	"	4 0	.. 5 0	5 8	.. 5 10
Cassia Fistula	per cwt.	10 0	.. 32 0	12 6	.. 15 0
Castor Seeds	"	5 0	.. 10 6	10 0	.. 10 6
Cocculus Indicus ..	"	9 0	.. 11 0	14 0	.. 16 0
Colocynth, apple ..	per lb.	0 6	.. 0 11	0 6	.. 0 11
Croton Seeds	per cwt.	35 6	.. 36 6	36 0	.. 38 0
Cubebs	"	30 0	.. 0 0	25 0	.. 27 0
Cumin	"	16 0	.. 23 0	15 0	.. 20 0
Dividivi	"	10 0	.. 15 0	12 0	.. 15 0
Feuugreek	"	11 0	.. 22 0	8 0	.. 16 0
Guinea Grains ..	"	20 0	.. 0 0	23 0	.. 0 0
Juniper Berries ..	"	8 0	.. 10 0	9 0	.. 11 6
Nux Vomica	"	9 0	.. 12 0	7 9	.. 14 0
Tamarinds, East India,	"	13 6	.. 15 6	20 0	.. 30 0
West India ..	"	10 0	.. 19 0	10 0	.. 16 0
Vauilla, large	per lb.	26 0	.. 40 0	56 0	.. 60 0
inferior ..	"	13 0	.. 19 0	35 0	.. 56 0
GINGER, Preserved, per lb.		0 4	.. 0 8	0 6	.. 0 7
HONEY, Chili	per cwt.	40 0	.. 47 6	35 0	.. 47 0
Jamaica ..	"	35 0	.. 46 0	40 0	.. 50 0
Anustralian ..	"	0 0	.. 0 0	0 0	.. 0 0
IPECACUANHA	per lb.	4 0	.. 4 6	4 0	.. 4 6
ISINGLASS, Brazil ..	"	2 7	.. 4 11	2 7	.. 5 0
Tongue sort ..	"	3 0	.. 5 2	3 0	.. 5 3
East India ..	"	1 6	.. 5 6	1 0	.. 5 0
West India ..	"	4 4	.. 4 9	4 4	.. 4 10
Russ. long staple	"	9 0	.. 12 6	13 0	.. 16 0
inferior ..	"	0 0	.. 0 0	0 0	.. 0 0
Simovia ..	"	2 0	.. 3 3	3 0	.. 4 0
JALAP, good	"	0 7	.. 0 8	0 7	.. 0 8
infer. & stems ..	"	0 6	.. 0 6½	0 6	.. 0 6½
LEMON JUICE	per degree	0 1½	.. 0 1½	0 2	.. 0 2½
LIME JUICE	per gall.	1 3	.. 1 8	1 6	.. 2 0
LIQUORICE, Spanish per cwt.		0 0	.. 0 0	55 0	.. 97 0
Liquorice Root ..	"	12 0	.. 30 0	20 0	.. 31 0
MANNA, flaky	per lb.	5 6	.. 6 0	4 6	.. 6 0
small	"	1 6	.. 1 9	1 6	.. 1 9
MUSK, Pod.	per oz.	19 0	.. 40 0	15 0	.. 42 0
Grain	"	45 0	.. 60 0	47 0	.. 49 0
OILS (see also separate list)		1876.		1875.	
Almond, expressed per lb.		1 4	.. 0 0	1 2	.. 0 0
Castor, 1st pale ..	"	0 4½	.. 0 4½	0 4½	.. 0 0
second ..	"	0 3½	.. 0 4	0 3½	.. 0 4½
Cod Liver	per gall.	5 6	.. 7 6	3 6	.. 6 0
Croton	per oz.	0 2½	.. 0 0	0 2½	.. 0 0
Essential Oils:		1876.		1875.	
Almond	per lb.	20 0	.. 0 0	25 0	.. 0 0
Anise-seed	"	7 0	.. 0 0	10 6	.. 0 0
Bay	per cwt.	0 0	.. 0 0	65 0	.. 70 0
Bergamot	per lb.	10 0	.. 15 0	10 9	.. 21 0
Cajeput	per bottle	2 9	.. 3 0	2 8	.. 2 10
Caraway	per lb.	9 0	.. 9 3	9 0	.. 0 0
Cassia	"	4 0	.. 0 0	4 2	.. 0 0
Cinnamon	per oz.	2 6	.. 6 6	1 0	.. 6 6
Cinnamon-leaf ..	"	0 2½	.. 0 2½	0 2	.. 0 3½
Citronelle	"	0 2	.. 0 0	0 1½	.. 0 1½
Clovo	per lb.	9 0	.. 0 0	10 6	.. 0 0
Juniper	"	0 0	.. 0 0	0 0	.. 0 0
Lavender	per lb.	1 8	.. 7 0	2 0	.. 5 6
Lemon	"	7 0	.. 9 6	7 0	.. 11 0
Lemongrass	per oz.	0 2½	.. 0 0	0 2½	.. 0 0

1876.				1875.			
Essential Oils, continued:—							
s.	d.	s.	d.	s.	d.	s.	d.
Neroli	3 0	6 6		0 4	3 0		
Nutmeg	0 7	0 7½		0 7	0 0		
Orange.....per lb.	6 0	9 0		6 0	9 0		
Otto of Roses.....per oz.	13 0	23 0		13 0	25 0		
Patchouli	2 0	3 6		2 0	3 6		
Peppermint:							
American	12 6	14 9		17 0	17 6		
English	34 0	35 0		32 0	36 0		
Rosemary	2 0	2 6		1 4	1 10		
Sassafras	2 3	2 6		2 3	2 6		
Spearmint	14 0	16 0		12 0	19 0		
Thyme.....	0 0	0 0		1 9	2 0		
Mace, expressed ..per oz.	0 6	0 10		0 7½	0 10		
OPIMUM, Turkey	19 6	21 6		29 0	30 0		
inferior	9 0	18 0		12 6	19 0		
QUASSIA (bitter wood) per ton	100 0	140 0		200 0	310 0		
RHUBARB, China, good and							
fine	3 0	4 5		4 0	4 8		
Good, mid. to ord. "	0 8	2 10		0 8	3 0		
Dutch Trimmed.. "	0 0	0 0		0 0	0 0		
ROOTS—Caiumba.....per cwt.	18 0	26 0		20 0	24 0		
China	19 0	24 0		19 0	24 0		
Chiretta	0 3½	0 4		0 4	0 6		
Galangal.....	19 0	22 0		19 0	22 0		
Gentian	23 0	24 0		23 0	24 0		
Hellebore	0 0	0 0		30 0	33 0		
Orris	26 0	75 0		26 0	75 0		
Pellitory	70 0	76 0		38 0	39 0		
Pink	0 0	0 0		0 10	1 3		
Rhatany	0 4	1 0		0 4	2 0		
Seneka	3 6	3 9		3 5	3 6		
Snake	0 6	0 6½		0 10	1 0		
SAFFRON, Spanish ..	35 0	36 0		20 0	23 0		
SALEP	0 0	0 0		0 0	0 0		
SARSAPARILLA, Lima per lb.	0 5	0 7		0 0	0 0		
Guayaquil	1 9	1 11		0 0	0 0		
Honduras	1 3	1 7		1 5	2 11		
Jamaica	2 8	3 0		2 5	2 11		
SASSAFRAS	0 0	0 0		0 0	0 0		
SCAMMONY, Virgin ..per lb.	24 0	30 0		25 0	36 0		
second & ordinary ..	6 0	22 0		7 0	24 0		
SENA, Bombay	0 1	0 4		0 1	0 4		
Tinnivelly	0 2½	2 0		0 1	0 10		
Alexandria	0 5	2 8		0 7	2 6		
SPERMACETI, refined ..	1 4	0 0		1 4	0 0		
American	1 0	0 0		1 1	0 0		
SQUILLS	0 2	0 3		0 3	0 5		
GUMS.							
AMMONIAC drop .. per cwt.	£ 2 2	£ 2 10		£ 2 15	£ 0 0		
lump.. "	1 0	1 12		1 5	2 0		
ANIMI, fine washed ..	11 0	12 10		11 0	12 0		
bold scraped ..	9 10	10 17/6		10 0	10 17/6		
sorts	6 10	9 5		5 10	9 17/6		
dark	4 0	6 0		4 10	5 10		
ARABIC, E.I., fine							
pale picked ..	2 19	4 0		3 0	3 16		
srts., md. to fin. "	2 10	2 18		1 13	2 19		
garblings ..	1 1	2 4		0 19	1 15		
TURKEY, pick. gd. to fin. "	6 10	10 15		6 0	9 0		
second & inf. "	3 0	6 10		3 0	5 18		
in sorts ..	2 5	2 10		1 10	2 15		
Gedda	1 6	1 10		1 1	1 4		
BARBARY, white ..	2 4	2 16		1 10	1 15		
brown ..	1 10	1 14		1 5	1 10		
AUSTRALIAN	1 15	3 5		1 14	2 4		
ASSAFETIDA, cm. to fin. "	0 18	2 11		1 2	2 3		
BENJAMIN, 1st & 2nd "	10 0	39 0		10 0	28 0		
Sumatra 1st & 2nd "	6 12/6	15 5		7 10	12 0		
3rd ..	3 10	5 5		3 10	4 10		
COPAL, Angola red ..	6 0	6 15		5 10	6 10		
Benguela ..	4 0	5 0		4 0	5 0		
Sierra Leone, per lb.	s. d. 0 7½	s. d. 0 11		s. d. 0 8	s. d. 1 1		
Manilla.....per cwt.	15 0	27 0		20 0	34 0		
DAMMAR, pale ..	62 0	65 0		56 0	60 0		
Singapore ..	62 0	65 0		50 0	60 0		
EUPHORBUM	11 0	16 0		12 0	20 0		
GALBANUM	0 5	1 3		1 0	1 6		
GAMBOGE, pkd. pipe per cwt.	200 0	260 0		180 0	240 0		
GUALACUM	1 6	3 2		0 6	2 0		
KINO.....per cwt.	40 0	50 0		50 0	90 0		
KOWRIE, rough ..	32 0	58 0		40 0	50 0		
scraped sorts ..	60 0	0 0		51 0	70 0		
MASTIC, picked ..per lb.	4 0	5 0		4 0	5 0		
MYRRH, gd. & fine ..per cwt.	160 0	170 0		170 0	200 0		
ord. to fair. "	100 0	155 0		61 0	170 0		
OLIBANUM, p. drop "	50 0	54 0		57 0	63 0		
amber & ylw. "	36 0	50 0		53 0	56 0		
garblings.....	15 0	26 0		23 6	32 0		
SENEGAL	3 0	3 5		2 0	2 5		
SANDARAC	75 6	85 0		85 0	100 0		
SHELLAC, Orange.. "	90 0	135 0		185 0	265 0		
Liver ..	85 0	105 0		165 0	200 0		
THUS	20 0	21 6		20 0	22 0		
TRAGACANTH, leaf "	240 0	400 0		180 0	360 0		
in sorts ..	25 0	175 0		30 0	195 0		
OILS.							
SEAL, pale	£ 33 10	£ 34 0		£ 33 0	£ 0 0		
yellow to tinged ..	31 0	33 0		30 0	32 0		
brown.....	29 10	0 0		29 10	30 0		
SPERM.....	84 0	83 0		93 0	0 0		
BODY	0 0	0 0		0 0	0 0		
COD	41 10	43 0		41 10	0 0		

1876.				1875.			
Oils, continued:—							
£	s.	£	s.	£	s.	£	s.
WHALE, South Sea, pale, per tun	34 10	to	35 0	35 0	to	0 0	
yellow „	32 0	..	34 0	32 0	..	34 0	0
brown „	28 0	..	30 0	29 0	..	30 0	0
East India, Fish „	26 0	..	0 0	23 10	..	24 0	0
OLIVE, Galipoli ...per ton	46 10	..	0 0	0 0	..	0 0	0
Gioja..... „	45 0	..	0 0	47 0	..	0 0	0
Levant „	0 0	..	0 0	43 10	..	0 0	0
Mogador „	0 0	..	0 0	0 10	..	0 0	0
Spanish „	0 0	..	0 0	0 0	..	0 0	0
Sicily „	0 0	..	0 0	0 0	..	0 0	0
COCOANUT, Cochinn. „	41 10	..	0 0	42 0	..	0 0	0
Ceylon „	37 10	..	38 0	39 0	..	39 15	0
Sydney „	32 0	..	37 0	32 0	..	38 10	0
GROUND NUT AND GINGELLY:							
Bombay	0 0	..	0 0	0 0	..	0 0	0
Madras	36 10	..	0 0	34 0	..	0 0	0
PALM, fine.....	38 0	..	39 0	34 10	..	0 0	0
LINSEED	26 1	..	26 12/6	24 7/6	..	0 0	0
RAPESEED, English, pale ..	40 5	..	40 10	35 0	..	0 0	0
brown	38 5	..	38 10	33 0	..	0 0	0
Foreign, pale ..	41 10	..	0 0	0 0	..	0 0	0
brown	0 0	..	0 0	0 0	..	0 0	0
COTTONSEED	31 10	..	32 0	30 10	..	0 0	0
LARD	58 0	..	0 0	59 0	..	60 0	0
TALLOW	28 0	..	46 0	23 10	..	45 0	0
TURPENTINE, American, cks.	s. d. 23 6	..	s. d. 0 0	s. d. 24 6	..	s. d. 0 0	0
French ..	0 0	..	0 0	0 0	..	0 0	0
PETROLEUM, Crude	0 0	..	0 0	0 0	..	0 0	0
refined, per gall.	1 5½	..	0 0	0 9½	..	0 9½	0
Spirit ..	1 1	..	0 0	0 10½	..	0 0	0
SEEDS.							
CANARY.....per qr.	70 0	..	80 0	160 0	..	200 0	0
CARAWAY, English per cwt.	40 0	..	45 0	44 0	..	0 0	0
German, &c....	0 0	..	0 0	0 0	..	0 0	0
CORIANDER	12 0	..	21 0	10 0	..	18 0	0
HEMP.....per qr.	40 0	..	45 0	36 0	..	38 0	0
LINSEED, English per qr. „	60 0	..	66 0	60 0	..	64 0	0
Black Sea & Azof	0 0	..	0 0	50 0	..	0 0	0
Calcutta ..	52 6	..	0 0	48 3	..	48 6	0
Bombay ..	52 0	..	53 0	52 0	..	0 0	0
St. Petersburg „	0 0	..	0 0	0 0	..	0 0	0
Mustard, brown..per bshl.	12 0	..	15 0	0 0	..	0 0	0
white.. „	13 0	..	16 0	10 0	..	13 0	0
POPPY, East India, per qr.	48 0	..	48 9	49 6	..	50 0	0
SPICES.							
CASSIA LIGNEA ..per cwt.	52 0	..	65 0	54 0	..	70 0	0
Vera	22 0	..	44 0	24 0	..	48 0	0
Buds	75 0	..	78 0	95 0	..	105 0	0
CINNAMON, Ceylon:							
1st quality per lb.	2 2	..	4 2	2 5	..	4 1	0
2nd do.	1 9	..	3 0	1 11	..	3 2	0
3rd do.	1 6	..	2 9	1 8	..	2 7	0
Tellicherry	2 9	..	3 0	3 0	..	3 5	0
CLOVES, Penang	2 2	..	2 2½	2 2	..	2 3	0
Amboyna	1 6½	..	1 7½	1 7	..	1 7½	0
Zanzibar.....	1 1½	..	1 2½	1 4	..	1 6	0
GINGER, Jam., fine per cwt.	93 0	..	202 6	80 0	..	160 0	0
Ord. to good	57 0	..	92 0	52 0	..	80 0	0
African	30 0	..	0 0	46 0	..	47 0	0
Bengal	29 0	..	30 0	40 0	..	42 0	0
Malabar	30 0	..	0 0	35 0	..	40 0	0
Cochin	48 0	..	144 0	57 0	..	120 0	0
PEPPER, Bk, Malabar, per lb.	0 4½	..	0 5½	0 5½	..	0 6½	0
Singapore	0 3½	..	0 0	0 5½	..	0 0	0
White Tellicherry ..	0 10	..	1 4	0 11	..	1 5	0
Cayenne	2 4	..	2 10	3 0	..	3 7	0
MACE, 1st quality ..	2 8	..	3 11	2 4	..	3 3	0
2nd and inferior ..	1 7	..	2 7	1 1	..	2 3	0
NUTMEGS, 78 to 60 to lb.	3 9	..	4 10	3 5	..	4 2	0
90 to 80 ..	3 3	..	3 10	2 11	..	3 4	0
132 to 95 ..	2 6	..	3 2	2 6	..	3 0	0
PIMENTA	0 4	..	0 0	0 2½	..	0 3	0
VARIOUS PRODUCTS.							
COCHINEAL—							
Honduras, black ..per lb.	2 6	..	2 9	1 10	..	2 5	0
„ silver ..	2 6	..	0 0	1 7	..	1 10	0
„ pasty ..	0 0	..	0 0	1 6	..	0 0	0
Mexican, black.....	2 5	..	0 0	1 9	..	1 10	0
„ silver.....	2 4½	..	2 5	1 7	..	1 8	0
Teneriffe, black ..	2 7	..	3 3	1 9	..	3 2	0
„ silver ..	2 6	..	0 0	1 8	..	1 10	0
SOAP, Castile.....per cwt.	26 0	..	33 0	33 0	..	34 0	0
SOY, China	1 6	..	1 8	2 2	..	2 3	0
SPONGE, Turk. fin. pkd prlb.	0 0	..	0 0	12 0	..	16 0	0
Fair to good ..	0 0	..	0 0	4 0	..	11 0	0
Ordinary ..	0 0	..	0 0	1 0	..	3 0	0
Bahama.....	0 0	..	0 0	0 6	..	3 0	0
TERRA JAPONICA—							
Gambier	19 3	..	0 0	28 0	..	28 6	0
Free cubes	32 0	..	34 0	39 0	..	40 0	0
Cutch	25 6	..	27 0	25 0	..	27 0	0
WOOD, DYE, Bar ..per ton	£3 7/6	..	£3 10	£4 10	..	5 0	0
Brazil	0 0	..	0 0	9 0	..	27 0	0
Cam.....	18 0	..	29 10	20 0	..	36 0	0
Fustic, Cuba	8 10	..	9 0	9 10	..	9 15	0
Jamaica	5 5	..	5 15	8 0	..	8 10	0
Logwood, Campeachy, „	9 10	..	10 0	9 0	..	10 0	0
Honduras	7 0	..	7 15	7 10	..	8 0	0
St. Domingo	5 10	..	6 10	6 5	..	6 15	0
Jamaica	5 5	..	5 15	6 15	..	7 0	0
LIMA, first pile	10 0	..	10 10	11 0	..	12 0	0
RED SANDERS	6 0	..	0 0	6 15	..	7 0	0



Mr. Wm. Robson, Great Grimsby, kindly sends us a letter received by him from the authorities at Somerset House, in reply to a query submitted by him. The reply states, "Referring to your letter relative to the liability to medicine stamp duty of a preparation called Dantzic black beer, I am directed by the Board of Inland Revenue to state that it does not appear that this article as sold by you is liable to stamp duty."

Chemicus (London).—You might study Parrish's "Pharmacy" (Baillière & Co., 30s.), and Proctor's "Lectures on Pharmacy" (Churchill, 12s.); but it is impossible to "attain a good knowledge of pharmacy" if you "cannot find time" either to attend a class or get into a shop. You might as well aim at being a Royal Academician without learning to use the brush.

T. H. W.—An apprentice should first of all make himself familiar with drugs, chemicals and pharmaceutical preparations. An intimate acquaintance with the materia medica is the most valuable knowledge he can acquire in his first two years. Let him have such a work as Royle's "Materia Medica," as well as the Pharmacopœia, by his side to consult, and compare the descriptions. Chemistry and botany might be taken up a little later.

W. C. D.—This correspondent asks if any of our readers will oblige with a formula for a good Leeming's essence.

Telloc.—Either of the books you name are suitable in studying for the Minor if you apply yourself systematically to the work. A master will always lend his apprentice what books he may have by him, but we consider it is for the apprentice to purchase such special works as he may require for his education.

J. V.—Fresenius "Quantitative Analysis" (12s. 6d.), is perhaps the best work of the kind. Galloway's "Quantitative Analysis" (8s. 6d.), and Bloxam's "Laboratory Teaching," are also good practical works. All are published by Churchill.

Ignoramus wants a formula for "surfeit water." Perhaps some one can help him.

Litmus.—The journal you refer to did not venture on a very rash assertion when it declared that "blue litmus is reddened by acids." That statement is perfectly correct. Your question "as to what extent litmus paper will detect an acid," is, however, as bad a specimen of a query as the above is of an answer. You mean, we suppose, "to what extent can a chemist detect an acid by the aid of litmus paper." This cannot be replied to very exactly. It depends on the optical power of the chemist. A very minute quantity of acid indeed would still have, no doubt, a very minute effect on litmus paper, even though such effect might not be perceptible to the quickest eyes. You surely don't imagine that there is a hard and fast line over which a test never steps.

A. H.—(1) Give full particulars to the registrar. (2) It is not legal for any one but a registered chemist and druggist to sell medicines, homœopathic or other, containing aconite, arsenic, antimony, or any poison named in the schedule of the Act.

R. F. M.—None but registered chemists may legally sell poisons; but sulphate of copper does not happen to be a legal poison.

M. P. S. (Plymouth).—We are obliged for your favour, but we do not quite see the point. The advertisement seems to have been inserted by a chemist.

Podophyllin.—How should this be pronounced? Some accent the second syllable, thus, Po-doph-yi-lin, which looks like a barbarism. Podophyllum, from podos, a foot, and phyllon, a leaf, is, by Loudon, accented on the third syllable. We are favoured with the above per special halfpenny postcard. We cannot dispute the classical correctness of our correspondent's communication. Nevertheless, at the risk of seeming barbarians, we shall continue to accent that word on the antepenultimate according to the usual method of the English language. The ordinary pronunciation of ge-og-raphy, ge-ol-ogy, and such like words, seems to us similarly open to pedantic criticism.

Cinchonidia Pills.—Mr. H. W. Harper, Boonville, Cooper County, Mo., U.S., has kindly sent us the following formula, which, after a number of experiments, he is able to pronounce "unexceptionable":—

R. Cinchonid. Sulph.	.. .. .	480 grains.
Acid tartaric	.. .. .	60 "
Glycerin. pus.	.. .. .	50 ounces.

Rub the alkaloid and acid thoroughly together in a mortar, till crystals are no longer visible, then add the glycerine, and continue the trituration till

the powder becomes adherent, when the whole may be beaten into a mass, and divided into pills as required. Mr. Harper finds starch the best powder for covering the pills.—You will always find the price of Howard's sulphate of quinine quoted in our Prices Current. It is invariably of the highest quality.

A Subscriber asks if any brother druggist will tell him what is the best kind of solution of indiarubber or gutta percha for coating ironwork, in order to render it safe from the attacks of lightning. He is also anxious to know what is the best paint for ironwork.

A. J. L.—Powdered colocynth sprinkled amongst the contents of the boxes or drawers is the easiest and most certain way of offending the moths. They hate it.

Juvenis.—To prevent the suppositories from adhering smear the interior of the moulds with a little glycerine.

R. D. Foster.—"Arsenical paste," for preserving the skins of birds, &c., is thus prepared:—

Carbonate of potash	.. .. .	12 ounces
White arsenic	.. .. .	4 "
Curd soap	.. .. .	4 "
Slaked lime	.. .. .	4 "
Powdered camphor	.. .. .	2 "
Water	.. .. .	Sufficient to form a paste.

A. W. C.—For chemistry—you will find Attfield's or Muter's text-books the best. For botany—Bentley's Manual. And in pharmacy and materia medica—Royle's or Bentley and Redwood's work will supply all the information you will need at present.—See reply to *T. H. W.*

X. Y. Z.—To become a Fellow of the Chemical Society you must produce a certificate of your eligibility, signed by five Fellows, three of whom must testify to your fitness, from personal knowledge. You ought to improve somewhat in English grammar before making application. "If it requires to pass the Major Examination or not to become F.C.S." is not quite the style of composition they like at Burlington House.

J. R.—(1.) *Hair Wash Powder.*—

R. Pulv. Boracis	.. .. .	3i.
.. Camphoræ	.. .. .	3i.
Ol. Rosmarini	.. .. .	gtt xx.

Sufficient to make a quart of lotion.

(2.) Peacock's oils we must leave some subscribers to enlighten you upon.

(3.) "Tinct. opii purif., free from narcotine, resin, &c.," is met most nearly by the extractum opii liquidum of the British Pharmacopœia.

Vinum.—If the spring water is free from organic contamination it would "keep" in a well corked bottle, for any number of months, without becoming "corrupt." If it is impure, the amount of spirit required to act as a preservative would be entirely dependent on the extent of the "corruption." Why not invest the money you would spend on proof spirit in a gallon of distilled water, and cut the gordian knot that way?—We do not remember any work especially devoted to the manufacture of British wines.

H. Normington.—Ginger ale, such as you want, is simply $\frac{1}{2}$ oz. of syrup of ginger in the bottle, to be filled at the machine with aerated water like lemonade; colour with burnt sugar to get the wine tint. (2) To whiten the glass tablets properly they require to be spread over with a thin layer of oxide of tin, and then heated to fusion. This can only be done properly at glass works. We do not think you can improve upon plaster of Paris, if you want to do the work yourself. (3) We are flattered by your preference of our opinion to that of the Commissioners of Inland Revenue in regard to your labels, but we confess we do not agree with you. The quinine wine, if made according to the B. P., does not require a medicine stamp, and may be sold without a sweets licence. But if made otherwise a licence must be taken, or medicine stamps attached, and we think your label is so worded as to necessitate the latter. Your cholera mixture would probably pass without a stamp if it were not for the bottom paragraph; but, in any case, it would be only through the grace of the Commissioners.

Ol. Morrhuæ.—We gave a formula for cod liver oil with hypophosphite of lime in our last December number. We reproduce it:—

	Parts
Pulv. gum acaciæ	68
Aq. de-till.	60
Syr. Calcis hypophosph.	120
Ol. morrhuae	250
Ol. anygd. ess.	6

A correspondent of the *American Druggist's Circular* asks, "why a tincture can be filtered through a double paper filter in less time than through a single one?" The editor answers:—The greater rapidity in filtering is attributed to the increased stiffness of the paper, which enables the filter to retain its creases, instead of becoming flattened against the sides of the funnel. The filter affords a large filtering surface when it keeps its plaited shape, but when it becomes soft and lump scarcely any liquid passes through except near the apex of the inverted cone.